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PROPOSED MOLYBDENUM TAILINGS DISPOSAL FACILITY FOR MOLYCORP, INC.

FINAL

ENVIRONMENTAL ASSESSMENT

FEBRUARY 1985

US DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT
ALBUQUERQUE DISTRICT
TAOS RESOURCE AREA

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MOLYCORP EA

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CHAPTER I

DESCRIPTION OF THE PROPOSED ACTION

INTRODUCTION

Molycorp, Inc. has filed millsite locations on public lands of the United States near Questa, New Mexico pursuant to 30 U.S.C. Section 42 (1976). The tailings disposal facility, proposed for construction on these lands, is a valid use of the land for millsite purposes.

Inasmuch as the proposal shall require in excess of five acres of surface disturbance, Molycorp, Inc. is required to file a plan of operations for approval by the Bureau of Land Management (BLM) 43 CFR 3809.1-4. The regulations contained in 43 CFR 3809 are authorized by section 302(b) of the Federal Land Policy and Management Act of 1976, 43 U.S.C. Section 1732(b)(1976), which states in part:

> Except as provided in section 314, section 603, and subsection (f) of section 601 of this Act and in the last sentence of this paragraph, no provision of this section or any other section of this Act shall in any way amend the Mining Law of 1872 or impair the rights of any locators or claims under that Act, including, but not limited to, rights of ingress and egress. In managing the public lands the Secretary shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands.

BLM's actions with respect to plans of operation are carefully circumscribed. If, after an environmental analysis has been completed, it is determined that the proposal will not result in unnecessary or undue degradation, the plan of operations must be approved (43 CFR 3809.1-6(a)(1)). If the reverse is the case, and the plan of operations would result in unnecessary or undue degradation, BLM must approve the plan with required conditions or mitigation measures to ensure that the detrimental impacts identified do not occur (43 CFR 3809.1-6(a)(2)). In this context, then, BLM's purpose in preparing this EA is to determine: 1) whether the plan of operations will likely result in unnecessary or undue degradation of the public lands and if so, 2) what changes in the plan or mitigation measures are required to bring the operations within authorized limits.

The first determination is controlled by the definition of "unnecessary or undue degradation", which states:

> "Unnecessary or undue degradation" means surface disturbance greater than what would normally result when an activity is being accomplished by a prudent operator in usual, customary, and proficient operations of similar character and taking into consideration the effects of operations on other resources and land uses, including those resources and uses outside the area of operations. Failure to initiate and complete reasonable mitigation measures, including reclamation of disturbed areas or creation of a nuisance may constitute unnecessary or undue degradation. Failure to comply with applicable environmental protection statutes and regulations thereunder will constitute unnecessary or undue degradation. Where specific statutory authority requires the attainment of a stated level of protection or reclamation, such as in the California Desert Conservation Area, Wild and Scenic Rivers, and other such areas, that level of protection shall be met. (43 CFR 3890.0-5(k))

In this instance, because of the location of the proposal, the reference to the stated level of protection in the Wild and Scenic Rivers Act, 46 U.S.C. Section 1271 et seq. (1976), is all important. That act was passed in 1968 to preserve, among other things, the scenic, recreational, wildlife, and free-flowing characteristics of certain "instant rivers," and to initiate studies of potential additions to the wild and scenic river system. See Id. Sections 1271, 1272 (1976). Additionally, section 7 of the Act requires that federally-assisted water projects on a wild and scenic river must not have "a direct and adverse effect on the values of which such river was established" (Id. Section 1278.) Without deciding the direct applicability of section 7, BLM has concluded that the standard stated therein is incorporated into the 3809 regulations' definition of unnecessary or undue degradation.

Portions of the Rio Grande and Red River were established by the Act as instant rivers in section 3 of the Act (Id. Section 1274 (a)(4)). Accordingly, the level of degradation permitted is that which does not have a direct and adverse impact on the rivers' values. If the degradation exceeds that standard, mitigation measures and conditions must be prepared and agreed to by Molycorp, Inc. before BLM has authority to approve the plan of operations.

The values of the Rio Grande and Red River, for which they were established as wild and scenic rivers, are addressed in the Act's legislative history as follows:

> Within the proposed area, there are superior opportunities for outdoor recreational activity-sightseeing, camping, hiking, horseback riding, and nature study. Both the Rio Grande and the Red Rivers (sic) are nationally renowned for their rainbow and brown trout fisheries (H.R. Rep. No. 1623, 90th Congress, 1st sess. 5 (1968)).

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Molycorp, Inc. has filed a plan of operations for a 1,320-acre tailings disposal facility to provide storage for about 200 million tons of molybdenum tailings from the company's Moly Mine. This facility is needed because the Moly Mine has been converted from an open-pit to an underground operation, thereby extending the life of the mine and leading to the production of a greater amount of tailings than the present disposal facility can handle. The disposal site is proposed to be located on public lands situated in a saddle on Guadalupe Mountain, where Molycorp has located its millsite claims.

DESCRIPTION OF THE PROPOSED ACTION

Guadalupe Mountain is a volcanic cone located in east central Taos County, New Mexico, about 3 miles west of the village of Questa. Molycorp's existing mine lies about 12 miles east of Guadalupe Mountain, and its tailings ponds about 1 1/2 miles east of this feature (refer to the Location Map at the back of this EA).

A portion of the existing tailings facilities will be expanded to accommodate the initial tailings from the underground operation, which began in mid-1983. The east dam (in Section 36, T. 29 N., R. 12 E.) will provide sufficient storage until 1988, when it is scheduled to be closed down. The west dam

(Section 35), will continue to operate after 1988 in conjunction with the Guadalupe Mountain pond; together, these ponds will provide sufficient storage capacity for about 30 years (until the year 2018). Initial expansion of the existing tailings ponds has already begun and is expected to be completed by 1985.

Construction of the Guadalupe Mountain tailings disposal facility would begin in late 1986 or early 1987 and is expected to be completed by 1989. It would include two 300 to 400 foot-high rock-filled dams, which would be located at opposite ends of a saddle that separates two peaks of Guadalupe Mountain. Initial construction would require about 2 to 3 million cubic yards of material, giving an initial storage capacity of about 28 million tons (for 4 years, based on a mill capacity of 18,000 tons/day). Subsequent raising of the dam would be in 50-foot increments and would ultimately require 20-25 million cubic yards of material. Molycorp has indicated that it will obtain as much material as possible from within the saddles; if additional material is needed, Molycorp will haul it from its private property in the Questa area.

Construction would require a workforce of about 15, all employees of Molycorp or a contractor, and the following type of equipment: 9-yard shovel, 85-ton ore truck, grader, bulldozer, crusher, scraper, and drill.

The tailings would be transported as a slurry (60 percent water and 40 percent solids, by weight) to the Guadalupe Mountain site via Molycorp's existing tailings line; a pumping station would be constructed at the east base of Guadalupe Mountain to move tailings to the new impoundment. A mixture of surface water and collected seepage (decant) would be transported back to the existing tailings facilities near Pope Lake, where it would be treated in a new ion-exchange plant to remove molybdenum and then discharged back to the Red River.

MITIGATING MEASURES THAT ARE PART OF THE PROPOSED ACTION

The following mitigating measures are part of the proposed action and are considered as such in impact analysis . As Molycorp is required to comply with the provisions of 43 CFR 3809 to prevent undue and unnecessary environmental degradation and provide for reclamation of the site after it is closed, the company has agreed to the following measures in its plan of operations:

1. The internal dam faces will be lined with an impervious membrane to prevent seepage.

2. Collected decant water will be carried to the ion exchange plant via lined ditch or pipeline.

3. A wildlife management plan will be developed in cooperation with the BLM and New Mexcico Game and Fish to minimize wildlife impacts. (Inventories and habitat analysis has already been initiated by the BLM to serve as baseline data for this plan and eventual reclamation requirements).

4. Any archaeological and/or paleontological resources found on the project site will be recorded and recovered in cooperation with the BLM.

5. To reduce the fugitive dust emissions from the dry tailings, a chemically inert stabilizer will be sprayed on the tailings to form a crust.

6. All survey monuments will be protected as much as possible from unnecessary destruction. Any section corner that is destroyed by construction activity will be immediately reported to the BLM. To ensure that all section corners can be restored, witness corners will be located by a certified surveyor or professional engineer outside of the project site.

7. All federal and state regulations pertaining to water quality and the disposal of solid wastes will be complied with.

8. The entire site will be fenced to prevent access onto the tailings pond.

9. Reclamation of all disturbed areas will be completed according to the provisions of 43 CFR 3809.1-3(d).

10. All applicable federal and state fire laws and regulations will be complied with, and reasonable measures will be taken to prevent and suppress fires on the site.

11. Molycorp will continue to use all practicable methods to reduce the noise of equipment and protect employees from excessive noise levels.

At the time of approval of the plan of operations, these measures, as well as those measures developed during the environmental assessment process will be included as final stipulations to prevent unnecessary or undue degradation of the lands. A copy of 43 CFR 3809 is included as Appendix A; these regulations describe the requirements for filing a plan of operations, including reclamation measures. Included as Appendix B is a copy of a section of Molycorp's plan of operations that analyzes the environmental considerations for the Guadalupe Mountain site, and a copy of the reclamation measures committed to by Molycorp for this site.

ALTERNATIVES TO THE PROPOSED ACTION

In most environmental assessments, the BLM is required to consider and assess alternatives to a proposed action, specifically: No Action, alternate locations, and alternate methods of accomplishing the same thing as a proposed action. However, in the case of an action authorized under the mining laws, such is not the case. Under the 43 CFR 3809 regulations, the BLM can only assess the impacts resulting from the proposed action, as described in the plan of operations; there is no provision for a discussion of alternatives. Consequently, this document will not address alternatives. Mitigation measures over and above those contained in the plan of operations required to avoid "unnecessary or undue degradation" are discussed fully in Chapter 3.

AUTHORIZING ACTIONS/REGULATORY LAWS AND AUTHORITIES

Authorizing Actions

The General Mining Law of 1872, as amended

This is the basic mining law governing the appropriation and purchase of federal mineral lands. It grants the right of an individual or company to use public land for mining and associated activities (e.g., milling or waste disposal). This is a statutory right granted by the U.S. Congress; the BLM does not have the discretionary authority to deny these actions except where they would jeopardize a rare or endangered plant and/or animal species or would involve unnecessary or undue degradation of the environment. In these cases, denial of an action is also non-discretionary.

The Mining and Mineral Policy Act of 1970

This law establishes the national policy of encouraging mineral development, especially strategic minerals, without undue hindrance.

Regulatory Laws

Section 2319 of the Revised Statutes (30 U.S.C. 22, et. seq.) provides that exploration, location and purchase of valuable mineral deposits, under the mining laws, on federal lands shall be "under regulations prescribed by law."

Section 2478 of the Revised Statutes, as amended (43 U.S.C. 1201, et.seq.) provides that mining regulations shall be issued by the Secretary of the Interior.

The Federal Land Policy and Management Act of 1976 (43 CFR 1201, et. seq.) amends the General Mining Law of 1872 to establish environmental protection requirements for any mining or mining-related activities on public land. Sections 302, 303, and 603 require the Secretary of the Interior to take any action, by regulation or otherwise, to prevent unnecessary or undue degradation of the federal lands, provide enforcement of those regulations, and to assure against pollution of streams and waters.

The Wild and Scenic Rivers Act (16 U.S.C. 1280) prohibits any federal agency or department from authorizing any water resources project that would have a direct and adverse effect on the values for which such river was established (Section 7(a)) and provides that regulations issued shall, among other things, provide safeguards against pollution of the rivers involved and unnecessary impairment of the scenery within the area designated for potential additions to, or an acutal component of the national wild and scenic rivers system (Section 9). Since the Department of Interior's Field Solicitor in Santa Fe, New Mexico has determined that the proposed Molycorp tailings project is a "water resources" project, both sections 7(a) and 9 apply.

Regulatory Authorities

Federal Agencies

Bureau of Land Management (BLM). This agency is charged with the responsibility of ensuring, through the 43 CFR 3809 regulations, that any mining or associated activities on public land authorized by the U.S. mining laws do not result in unnecessary or undue environmental degradation. In this capacity, the BLM is responsible for reviewing and approving all plans of operations involving public lands.

Environmental Protection Agency (EPA). This agency is charged by law with developing and enforcing environmental standards to protect the nation's land, air and water systems. As part of these responsibilities, the EPA is required by 42 U.S.C. §7609 to review and comment in writing on the environmental impact of proposed federal actions in areas over which the EPA has jurisdiction or in which the agency has special expertise.

U.S. Fish and Wildlife Service, Department of the Interior. In accordance with 16 U.S.C. §1531 et seq., the Secretary of Interior, through the U.S. Fish and Wildlife Service, is required to ensure the protection and conservation of those species of fish and wildlife that are threatened with extinction and to prevent the destruction or adverse modification of the critical habitat of such species.

Advisory Council on Historic Preservation. Section 106 of the National Historic Preservation Act of 1966, as amended, requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking that affects cultural resources in areas listed on or eligible for inclusion in the National Register of Historic Places, in order to protect those resources.

State Agencies

State Historic Preservation Officer (SHPO). Under 36 CFR 800, the BLM is required to consult with the New Mexico SHPO before undertaking any actions that will affect cultural resources.

Environmental Improvement Division (EID). The EID is responsible for environmental management and consumer protection in New Mexico to ensure optimum safety, health, comfort and economic and social wellbeing of the inhabitants of the state. Regulations and standards are enforced by the EID pertaining to water supply, water pollution control, liquid and solid waste disposal, air quality, radiation control, and hazardous waste control, among others. The EID will require a discharge plan for the proposed tailings facility. This was indicated in a letter to Molycorp dated January 31, 1983. A second letter of August 17, 1983 details requirements for approval of a discharge plan (see Appendix F).

However, the EID has indicated via letter (dated September 9, 1982) that the proposed Molycorp tailings disposal site is not subject to state air quality permit requirements (Air Quality Control Regulation 702). As long as the total suspended particulate matter from the facility does not exceed federal or state ambient air quality standards, a permit will not be required.

State Engineer. The New Mexico State Engineer has the duty to supervise the apportionment of water, including works used for the storage, diversion or carriage of water. The State Engineer's regulations include a permit program for construction, operation, maintenance and inspection of dams to ensure safety and protection of life and property.

To determine the safety of a dam, the State Engineer's office reviews all designs and analyses, including dam stability, underseepage, hydraulic fracturing, hydraulic uplift, seismicity and liquifaction, prior to the issuance of any permit. A permit will not be issued until the State Engineer's office is satisfied that the dam is safe. After issuance of a permit, the State Engineer's office conducts periodic inspections to verify the safety of the dam.

Department of Game and Fish (DG&F). The Department of Game and Fish has the responsibility for all game, non-game and fish within the State of New Mexico. The BLM, through cooperative agreements with the DG&F and the Fish and Wildlife Service achieve coordination to the benefit of wildlife and the public. The Bureau has worked extensively with the Department on habitat improvement and evaluation programs.

UNAVAILABLE INFORMATION

Quantitative data are unavailable for the following items:

1. Long-term effects of fugitive dust on human health. The Air Quality Bureau of the EID has been monitoring air quality for approximately 2 years and has not made any conclusions.
2. Toxicity data for the specific aquatic organisms found in springs that are tributary to the Rio Grande and Red River.
3. Sufficient site specific information on groundwater and geologic characteristics (fracturing/jointing, flow thicknesses, interflow zones as aquifers and pathways, transmissivities, etc.) under the proposed site and down gradient to accurately predict the volume, rate and direction of groundwater movement and the degree of dilution of seepage.

CHAPTER II

THE AFFECTED ENVIRONMENT

This chapter decribes those environmental components that are most likely to be impacted by the Proposed Action.

AIR QUALITY

The existing air quality of the Guadalupe Mountain area appears to be excellent. The nearest sources of contamination are the existing Molycorp tailings ponds 1 mile east. Particulate concentration data for Questa, New Mexico (directly east of the ponds) shows levels well within state and federal standards, although the state 24-hour standard may be exceeded during extreme conditions by fugitive dust.

WATER RESOURCES

Surface Water

No data are available for on-site surface water. Surface water is scarce because of limited precipitation (13 inches per year) and high permeability of the surface deposits. Runoff occurs primarily during high-intensity summer rainstorms (generally of short duration). No permanent bodies of water exist on the site, although a small catchment on the west side of the site holds runoff for short periods.

The nearest sources of year-round surface water are the Rio Grande, and the Red River. Water quality of the two rivers is designated as cold water fishery, fish culture, livestock and wildlife watering, and secondary contact recreation water (New Mexico Water Quality Control Commission 1982).

A summary of selected parameters for three stations near the proposed site is given in Table 1. Garn (1984) reports that projected state standards for several parameters at Red River stations may be exceeded.. These parameters include cadmium, copper, zinc and cyanide. Elevated levels of dissolved solids, sulfate and molybdenum also occur, however, no state water quality standards have been established for these parameters.

The water quality of Molycorp's effluent is included in Table 2; water quality of the untreated tailings water may be poorer. This water is generally of significantly poorer quality than the adjacent river water. Specific conductance (a measure of dissolved solids) of tailings water has been measured at 2,000 micromhos (umhos) compared to Red River water above the tailing outfall at 257 and 440 umhos below the outfall. (During the period of mill shutdown this value averaged 258 and 341 umhos respectively over a twelve month period.) The water quality of the Rio Grande above the confluence with the Red River is generally better than that from the Red River, averaging a specific conductance of 220 umhos.

TABLE 1

WATER QUALITY OF RIO GRANDE AND RED RIVER a/

Parameter	Rio Grande Near Cerro	Red River b/ Below Questa	Red River Above c/ Fish Hatchery
Temperature (degrees Celsius)	10.4(38)	8.9(42)	12.9(23)
pH, field (median valve)	8.1(37)	7.5(39)	8.0(40)
Sediment suspended (mg/l)	36.5(26)	207(30)	70(26)
Specific Conductance (umhos)	220(37)	257(39)	440(40)
Hardness (mg/l as $CaCO_3$)	78(29)	116(29)	216(29)
Cadmium total (ug/l)	0.22(25)	0.63(28)	0.40(29)
Copper total (ug/l)	3.9(8)	23.5(11)	22.4(11)
Cyanide (ug/l)	0.0(16)	40.0(19)	10.0(22)
Iron dissolved (ug/l)	61.3(32)	17.0(34)	15.3(35)
Sulfate dissolved (ug/l)	35.8(24)	77.1(23)	196(24)
Manganese dissolved (ug/l)	15.9(31)	293.00(34)	230(35)
Molybdenum total (ug/l)	4.3(37)	14.9(40)	193(40)
Nitrogen total (mg/l)	0.97(28)	0.61(28)	3.07(28)
Phosphorus total (mg/l)	0.12(28)	0.13(29)	0.20(25)
Zinc total (ug/l)	30.1(33)	107.2(40)	66.0(40)
TOC (mg/l)	5.12(30)	4.32(32)	2.74(31)

Note: a/ Average of values for selected parameters, collected by the BLM, analyzed by the U.S. Geological Survey (Denver) from October 1978 to March 1981. Number of samples is in parentheses.

b/ Station located 1 mile above existing tailings discharge point.

c/ Station located .5 mile below existing tailings discharge point

TABLE 2

COMPARISON OF CHEMICAL QUALITY OF WELL, SPRING, AND TAILINGS-WATER SEEPAGE FOR SELECTED PARAMETERS

Parameter	Well	Spring a/	Tailings b/ Outfall
Cadmium (ug/l)	.05	.04	10.00
Iron (ug/l)	3.0	3.00	360.
Manganese (ug/l)	1.0	1.00	1100.
Molybdenum (ug/l)	4.0	4.00	2920.
Zinc (ug/l)	49.0	3.60	41.00
pH (units)	7.9	7.5-8.1	7.5-8.2
Cyanide (ug/l)			22.00
N Total (mg/l)	.60	.68	1.31
P Total (mg/l)	.01	.07	0.13
Specific Conductance (umhos)	220.	214.00	2,000.
Sulfate (mg/l)	22.	21.00	1,200.

a/ Average value for samples collected at two springs down gradient from proposed site and within the Wild and Scenic River System.

b/ Average of values reported to the EPA by Molycorp under NPDES permit for the period January through September 1981, except N, P and Specific Conductance which is from BLM data.

Ground Water

Information on subsurface water is based on the contents of a report by Winograd (1959) and recent analysis of springs and wells by the U.S. Geological Survey for the BLM. Information on tailings water of the existing facility has been included for comparison with ground water downgradient from the proposed site.

The regional water table is located approximately 750 feet below the surface of the proposed Guadalupe Mountain site. The water flows southwesterly towards the Wild and Scenic River System. (For more details on ground water levels and flows, refer to Drawings T 10537-1 and 3 of Molycorp's plan of operations, located at the back of this EA).

Water quality data for selected parameters from three sampling sites (one well and two springs) downgradient from the proposed site are contained in Table 2. The springs (Big Arsenic and a spring below the fish hatchery) are located in each of the two canyons composing the Wild and Scenic River (refer to Figure 1 for site locations). The well is located near the BLM Visitor Center about 4 miles southwest of the proposed site. Table 2 also contains a summary for similar parameters from analysis of tailings water by Molycorp as part of their NPDES permit. This comparison reveals a significant difference between existing ground water conditions and tailings outfall. Values for manganese and molybdenum are 1100 and 730 times greater for tailings versus spring water. Concentrations of iron and sulfate are 120 and 57 times greater. Specific conductance is 9.3 times higher.

Ground water inflow to the Rio Grande between Cerro Chiflo and the mouth of the Red River is estimated at 46 cubic feet per second (cfs) and between the fish hatchery (on the Red River) and the Rio Grande at 12 cfs (Winograd 1959). Seepage measurements done by the U.S. Geological Survey between 1957 and 1965, and the BLM in 1982, verify these estimates. Spring flows were measured at 2.9 cfs for the Big Arsenic site and 0.31 cfs for the fish hatchery site (BLM measurement). These values indicate the volume of ground water moving through the basalt under or around Guadalupe Mountain. These figures are representative of only two of the many springs within the Red River/Rio Grande system.

FLOODPLAIN/FLOOD HAZARD EVALUATION

No designated floodplain zones occur within the proposed tailings disposal facility site. The tailings ponds may prove a threat to areas below the dams in the event of dam failure. The area of concern would include the drainages east and west of the site leading to the Red River and the Rio Grande.

TOPOGRAPHY

The proposed tailings disposal facility would be located in mountainous terrain, in a saddle between two peaks of Guadalupe Mountain that rise to elevations of 8,722 feet (southwest peak) and 8,763 feet (northeast peak). As illustrated on the Location Map (at the back of this EA), the area is characterized by an elongated, northwest-southeast trending, nearly flat-lying valley, flanked on the northeast and southwest by moderately steep (up to 30

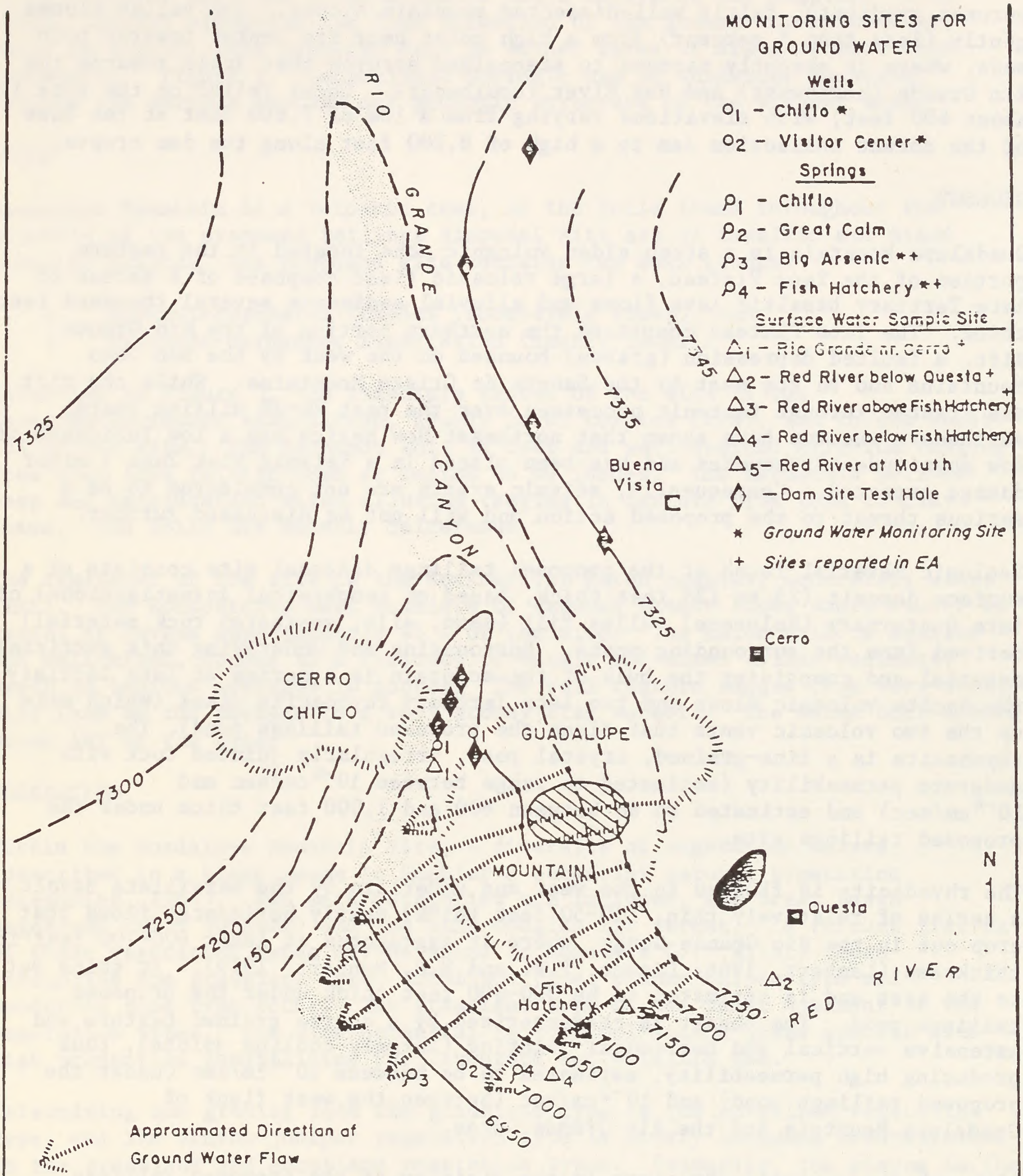
MONITORING SITES FOR GROUND WATER
Wells
O_1 – Chiflo *
O_2 – Visitor Center *
Springs
ρ_1 – Chiflo
ρ_2 – Great Calm
ρ_3 – Big Arsenic *+
ρ_4 – Fish Hatchery *+
Surface Water Sample Site
$\triangle_1$ – Rio Grande nr. Cerro +
$\triangle_2$ – Red River below Questa +
$\triangle_3$ – Red River above Fish Hatchery +
$\triangle_4$ – Red River below Fish Hatchery
$\triangle_5$ – Red River at Mouth
◇ – Dam Site Test Hole
* Ground Water Monitoring Site
+ Sites reported in EA
RIO GRANDE CANYON
Buena Vista
Cerro
CERRO CHIFLO
GUADALUPE MOUNTAIN
Questa
RED RIVER
Fish Hatchery
N
7345
7335
7325
7325
7300
7250
7200
7150
7100
7050
7000
6950
7250
7200
7150
Approximated Direction of Ground Water Flow
Existing Tailings
Proposed Tailings Area
—7000— Water Level Contour In feet above sea level
Scale: 1:126720
0 1 2
Scale of Miles
Based on Winograd, 1959.

FIGURE 1
GROUND WATER CONDITIONS AND MONITORING LOCATIONS

percent gradient), fairly well-dissected mountain slopes. The valley slopes gently (less than 5 percent) from a high point near its center towards both ends, where it abruptly narrows to steepsided arroyos that drain towards the Rio Grande (northwest) and Red River (southeast). Local relief on the site is about 600 feet, with elevations varying from a low of 7,600 feet at the base of the decant collection dam to a high of 8,200 feet along the dam crests.

GEOLOGY

Guadalupe Mountain is a steep sided volcanic cone located in the eastern portion of the Taos Plateau, a large volcanic field composed of a series of late Tertiary basaltic lava flows and alluvial sediments several thousand feet thick. The Taos Plateau comprises the northern portion of the Rio Grande Rift, a faulted depression (graben) bounded on the west by the San Juan Mountains and on the east by the Sangre de Cristo Mountains. While the rift was created through tectonic processes over the past 26-28 million years, earthquake records have shown that northeast New Mexico has a low incidence of low magnitude earthquakes and has been placed in a Seismic Risk Zone 1 minor damage expected. Consequently, seismic events are not considered to be a serious threat to the proposed action and will not be discussed further.

Geologic material found at the proposed tailings disposal site consists of a surface deposit (25 to 125 feet thick, based on geophysical investigations) of late Quaternary (Holocene) valley fill (sand, silt, weathered rock material) derived from the surrounding peaks. Surrounding and underlying this surficial material and comprising the bulk of the mountain is a series of late Tertiary rhyodacite volcanic flows and two late Tertiary rhyodacite dikes (which make up the two volcanic vents that flank the proposed tailings pond). The rhyodacite is a fine-grained, crystal poor, irregularly jointed rock with moderate permeability (estimated to range between 10^{-6}cm/sec and 10^{-4}cm/sec) and estimated to be between 600 and 1,000 feet thick under the proposed tailings site.

The rhyodacite is flanked to the west and underlain by the Servilleta Basalt, a series of relatively thin, (10-50 feet thick) nearly horizontal flows that crop out in the Rio Grande Gorge, where it aggregates at least 600-700 feet in thickness (Lambert, 1966; Lipman, P.W. and H.H. Menhert, 1979). It thins out to the east and is estimated to be 300-400 feet thick under the proposed tailings pond. The basalt is characterized by a coarse grained texture and extensive vertical and horizontal jointing (largely cooling joints), thus producing high permeability, estimated to be between 10^{-4}cm/sec (under the proposed tailings pond) and 10^{-2}cm/sec (between the west flank of Guadalupe Mountain and the Rio Grande Gorge.

Although the geologic structure in the vicinity of the proposed tailings facility appears to be fairly simple, with very little evidence of crustal deformation (e.g., folding), there is evidence of structural displacement in the form of faulting. Topographic alignments and disrupted strata in both the Red River and Rio Grande Canyons suggest the presence of a series of faults between Sheeps Crossing and the confluence of the Red River with the Rio Grande. The most direct evidence is found along a fault that runs between the Fish Hatchery and Bear Crossing and which shows some 75 feet of vertical displacement in the Rio Grande Gorge, and a probable fault at Sheep's Crossing which shows some 10-20 feet of vertical displacement in the Rio Grande Gorge.

It is possible that one or more faults could intersect the regional water table, thereby affecting the flow direction of the ground water; however, there is insufficient geologic data to either agree or disagree with this contention. Figure 2, "Generalized Geologic Map of Guadalupe Mountain," depicts the surface geology and geologic structure of the project area.

SOILS

Guadalupe Mountain is a volcanic cone, so the soils found throughout the majority of the proposed tailings disposal site are of basaltic and mixed alluvial origin. The proposed site contains two soil groups:

1. Rockoutcrop-Raton Complex (moderately steep), and
2. Fernando-Hernandez Association (nearly level).

Referring to Figure 3, the immediate center of the site is the Fernando-Hernandez Association, nearly level complex (FHB), and covers about 15% of the site. The Fernando soil is deep and well-drained alluvium ranging from clay loam to silt loam at depths to 60 inches. The Hernandez soil is deep and well-drained mixed alluvium ranging in texture from loam to clay loams. The soils are notably calcareous.

The remainder of the site is the Rockoutcrop-Raton complex, moderately steep (RRE). The Rockoutcrop soil consists of exposed basalt flows where runoff is rapid; it covers approximately 45 % of the site. The Raton soil is shallow and well-mixed, formed in a residuum of basalt and mixed eolian sediment. Depth to bedrock averages 18 inches. The soil texture ranges from very stoney silt loam on the surface to a very stoney clay subsoil. The Raton Soil covers about 40% of the site.

VEGETATION

Within the Guadalupe Mountain site, a diversity of vegetation exists (described in a broad sense in Kuchler's potential natural vegetation categories, 1964). Two main categories are included, the Great Basin sagebrush (with juniper) and the pine-Douglas fir forest. (A further listing of these vegetation types may be found in Appendix C). Within these categories the grassland type, shrubland type, pinon-juniper type and ponderosa pine type occur. The grassland type is the least dominant of the vegetation types. The site potential is for cool-season grass species with high production capabilities for livestock and wildlife use.

Intermixing and grading into the grassland type is the shrubland vegetation type, and the pinyon-juniper vegetation type is slowly becoming reestablished in the grassland and shrubland vegetation types. Primarily, the pinyon is the most dominant species. Scattered small pockets of brush and ponderosa pine may be expected within the pinyon-juniper vegetation type.

The ponderosa pine vegetation type is scattered along the higher slopes. The age of the stand is approximately 150 years with no appreciable amount of regrowth. If left unimproved, the ponderosa pine will eventually be overtaken by the pinyon-juniper type. Scattered Douglas fir may be found throughout the ponderosa pine vegetation type.

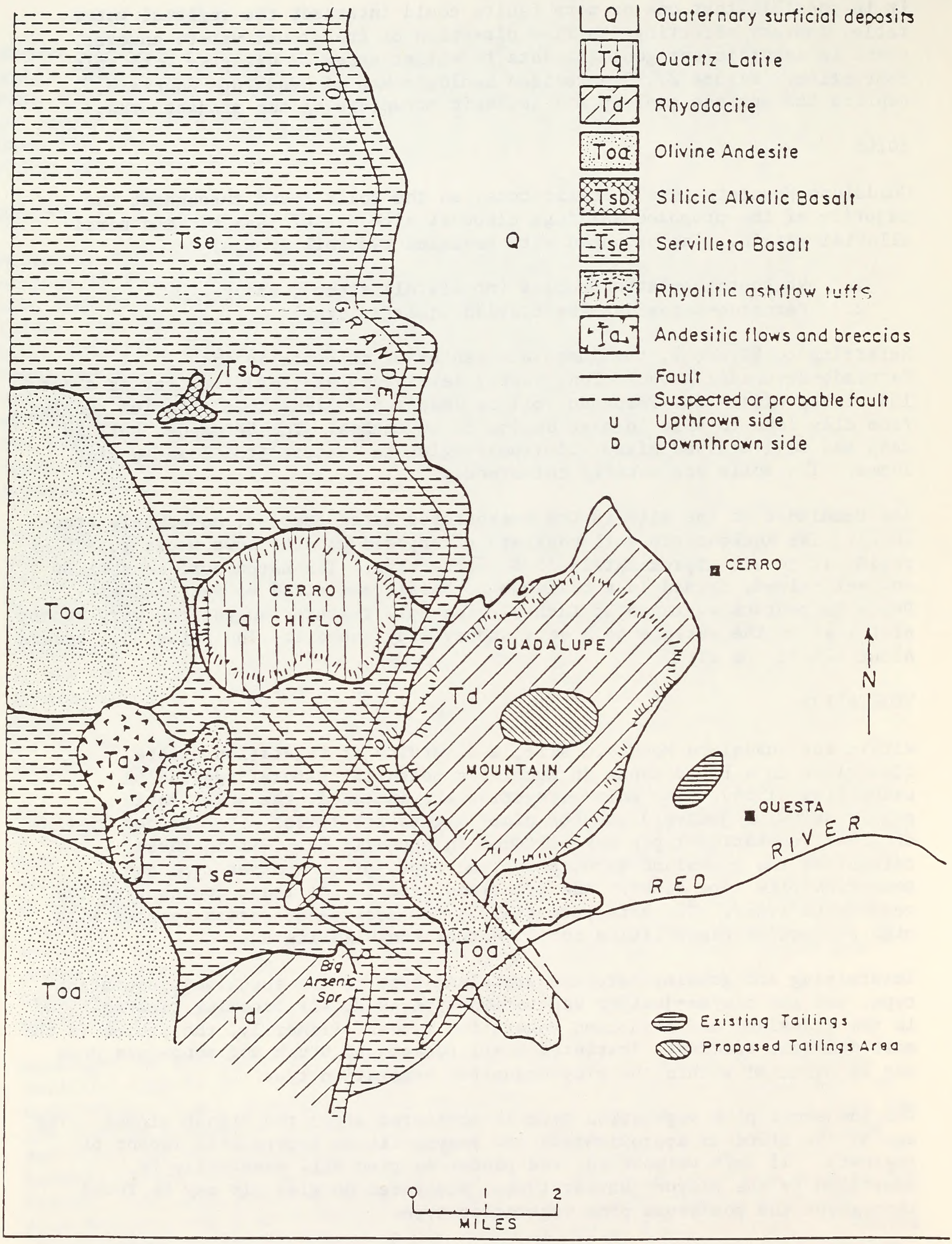

FIGURE 2. GENERALIZED GEOLOGIC MAP OF GUADALUPE MOUNTAIN AREA. Based on P. W. Lipman and H. H. Mehnert. (1979)

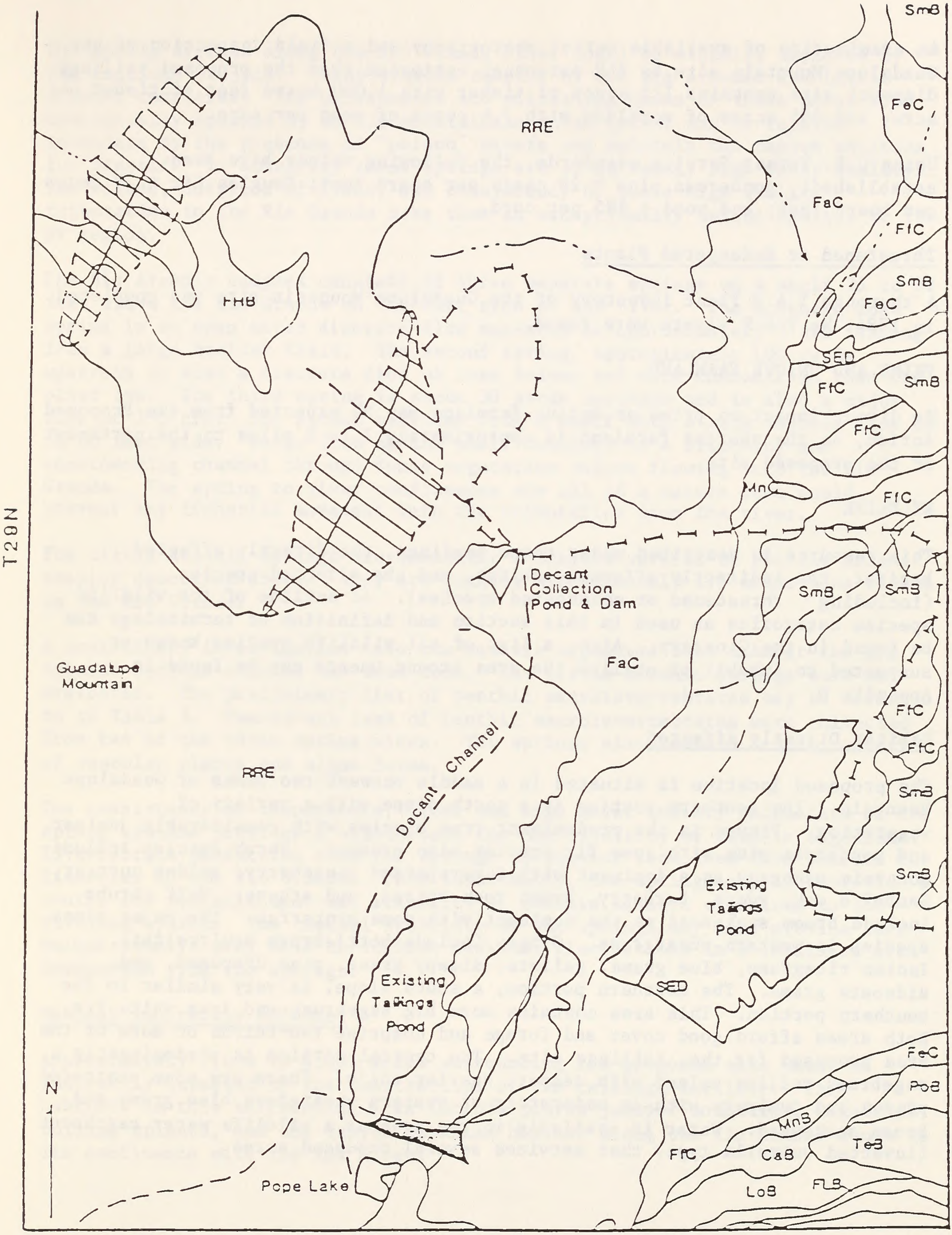

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FIGURE 3

SOILS IN THE VICINITY OF THE PROPOSED MOLYCORP TAILINGS POND

An examination of available aerial photography and a field inspection of the Guadalupe Mountain site by BLM personnel estimated that the proposed tailings disposal site contains 125 acres of timber with 1,000 board feet of timber per acre; and 895 acres of woodland with 7.4 cords of wood per acre.

Using U.S. Forest Service standards, the following values have been established: ponderosa pine = 20 cents per board foot; Douglas fir = 28 cents per board foot; and wood = $85 per cord.

Threatened or Endangered Plants

A thorough T & E Plant inventory of the Guadalupe Mountain site was completed in 1984. No T & E plants were found.

PRIME AND UNIQUE FARMLAND

No direct impact on prime or unique farmland may be expected from the Proposed Action, as the nearest farmland is approximately 1 to 2 miles to the northeast of the proposed site.

WILDLIFE

This resource is described under three headings, the directly affected habitat, the indirectly affected habitat, and the affected species (including threatened or endangered species). An outline of the wildlife species categories as used in this section and definition of terminology can be found in the Glossary. Also, a list of all wildlife species known or suspected to inhabit or utilize the area around Questa can be found in Appendix D.

Habitat Directly Affected

The proposed location is situated in a saddle between two peaks of Guadalupe Mountain. The southern portion is a north slope with a variety of vegetation. Pinyon is the predominant tree species with considerable juniper and ponderosa pine with some fir species also present. Shrub species include mountain mahogany as a dominant with interspersed gooseberry, golden currant, Gambel's oak, yucca, barberry, brush rock spirea, and others. Half shrubs include broom snakeweed as the dominant with some winterfat. The major grass species is western wheatgrass. Others include bottlebrush squirreltail, Indian ricegrass, blue grama, galleta, sleepy grass, pine dropseed, and sideoats grama. The northern portion, a south slope, is very similar to the southern portion. This area contains more big sagebrush and less white fir. Both areas afford good cover and forage and comprise two-thirds or more of the area proposed for the tailings site. The central portion is predominantly a sagebrush rolling upland with deeper, heavier soils. There are some scattered pinyon and junipers with an understory of western wheatgrass,blue grama and broom snakeweed. Water is available in the area as a wildlife water catchment (inverted umbrella type) that services several thousand acres.

The spring systems along the Rio Grande River could be directly impacted by the tailings project. These systems consist of the Big Arsenic and Little Arsenic complexes. The unfortunate and misleading names of these areas were historically spawned by an old mountainman whose intent was to repulse intruders by the presence of "poison" waters and maintain the canyon solitude for himself. In actuality these springs are of extremely high water quality. The volume, duration of flows, and consistancy of these high quality tributaries to the Rio Grande make them an exceptionally unique habitat to the SW region.

The Big Arsenic complex consists of three separate springs on a shelf 25 to 50 feet above the Rio Grande on the east side of the river. The southern most spring is an open water discrete flow measured at approximately 3 cfs issuing from a large boulder field. The second spring, approximately 100 yards upstream is also a discrete flow of less volume and more channelized than the other two. The third spring is about 30 yards upstream and is also a major flow of 3-5 cfs. The stream extrudes from a shelf with a very obvious flow 60 to 80 feet wide. Water flow on the shelf consists of a branching and anastomosing channel through dense vegetation before flowing into the Rio Grande. The spring to river confluences are all of a nature that would prevent any fisheries movement into the tributaries from the river.

The Little Arsenic Springs are basically a smaller version of the Big Arsenic complex described above. They are located approximately 1.5 miles down stream on the Rio Grande.

A preliminary investigation into the aquatic organisms that inhabit the Big Arsenic Springs complex has been done. The Little Arsenic Springs were not evaluated. The preliminary list of benthic macroinvertebrates may be referred to in Table 3. Twenty-six taxa of benthic macroinvertebrates were collected from two of the three spring sites. The springs also contain a wide variety of vascular plants and algae forms.

The consistency of temperature, flows and high water quality parameters of the spring systems provides a stable base for the diversity of aquatic organisms. Invertebrate production from the springs do provide localized food sources for fisheries in the Rio Grande. More importantly, the springs may also provide a source for replenishment and stability of certain aquatic organisms to the riverine system. The thermal stability of the springs may also provide very unique aquatic prey base throughout seasonal fluctuations in a localized area downstream from the springs.

Habitat Indirectly Affected

Approximately 7,000 to 8,000 acres surrounding the proposed site would be indirectly impacted by the construction of the tailings facility. The habitats in this surrounding area include pinyon-juniper mountains, sagebrush rolling uplands, and the canyon riparian habitat along the Rio Grande south to its confluence with the Red River.

TABLE 3

Preliminary list of benthic macroinvertebrates collected[1] in the Big Arsenic Springs, Rio Grande Wild and Scenic River, New Mexico in January and May, 1983

- Lepidoptera (aquatic moths)
  - _Paragyractus_ sp.
- Plecoptera (stonefly)
  - *_Hesperoperla pacifica_
- Ephemeroptera (mayfly)
  - _Baetis_ sp.
- Trichoptera (caddisflies)
  - _Hydropsyche_ sp.
  - *_Brachycentrus_ sp.
  - *_Micrasema_ sp.
  - *_Chimarra_ sp.
  - *_Wormaldia_ sp.
  - Hydroptilidae A and B
  - *_Hydroptila_ sp.
  - *_Helicopsyche_ sp.
- Coleoptera (beetle)
  - Elmidae
- Hemiptera (true bugs)
  - _Ambrysus mormon_
  - Veliidae
- Ostracoda (sea shrimp)
- Amphipoda (scud/side swimmer)
  - _Gammarus_ sp.
- Diptera (True flies)
  - Snisononicae
  - Simuliidae
  - _Stratiomys_ sp.
  - _odontomyia_ sp.
  - Odonata (damselfly)
    - Coenagrionidae
- Turbellaria (flat worms)
- Oligochaeta (round worms)
  - Tubificidae
  - Lumbriculidae
- Mollusca (snail)
  - _Physa_ sp.

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*Uncommon; all other taxa were common to abundant.

[1] collected by BLM, USF&WS, NMG&F, NMEID personnel.

The pinyon-juniper and sagebrush habitats involve approximately 3,500 acres each, with the canyon habitat being roughly 1,000 acres. The pinyon-juniper and sagebrush habitats provide considerable edge (refer to the Glossary). Pinyon and juniper trees are currently becoming re-established within the sagebrush-dominated areas. The entire area from the north end of Guadalupe Mountain to the confluence of the Red River and the Rio Grande provides a full range of necessary habitat components for a wide variety of species.

The close proximity of the Rio Grande Gorge to these two otherwise common habitats greatly enhances the site area's value for wildlife. The gorge has a wide diversity of vegetation, landforms, aspects, soils and structures. The unique arrangement of landforms and vegetation provides a rare and desireable wildlife habitat privacy which is essential to the ecosystem while also supporting a high degree of visitor (recreation) use.

The gorge is exceptional habitat for birds of prey with cliff areas providing excellent nesting and roosting sites for several species. Special habitat features include rocks and boulder outcrops, dense groves of both deciduous and evergreen trees, and springs.

Trees within the gorge include Rocky Mountain juniper, Douglas fir, pinyon, willow, and cottonwood. Shrubs include snowberry, golden currant, gooseberry, mountain mahogany, brushrock spirea, big sagebrush, rubber rabbitbrush, and wild grape. Typical grasses include western wheatgrass, blue grama, sideoats grama, pinyon ricegrass, Indian ricegrass, Kentucky bluegrass, cheatgrass, wolftail, and bottlebrush squirreltail.

The aquatic habitats of the Rio Grande and the Red River provide one of the state's better cold water sport fisheries; they yield many trophy-size brown and rainbow trout. Both rivers are important for brown trout spawning in this particular area.

Wildlife Species Affected

For the purpose of analysis, the 249 wildlife species potentially occurring on or near the proposed site is provided in Appendix D. For discussion purposes, species are grouped into two categories, significant species and ecosystem maintenance species. Significant species include recovery species (threatened or endangered species), harvest species, and special interest species (refer to the Glossary for definition of these terms). The criteria for defining significant species for site specific situations includes the degree and importance of their uses in that area.

Significant Species

Recovery Species (Threatened or Endangered Species). The New Mexico Department of Game and Fish shows that eight threatened or endangered (T or E) species may potentially occur in Taos County, as listed in Table 4. Of the eight species, three are more likely to frequent or occur near the proposed Guadalupe Mountain site than the remaining five. They are the bald eagle, the peregrine falcon and the whooping crane.

TABLE 4

POTENTIAL THREATENED OR ENDANGERED WILDLIFE STATUS, LOCALITY, HABITAT PREFERENCE AND CRITICAL HABITAT DESIGNATION IN TAOS COUNTY, NEW MEXICO

Species	Locality Records for Taos County (or surrounding areas)	Habitat Preference	Primary Area of Potential Use	T or E Status
Marten a/ (*Martes americana origenes*)	NE Taos in Carson National Forest, unverified records in Sangre de Cristos north of Taos	Spruce, fir and alpine forests	Ute Mountain area and Sunshine Valley	State (Group II) b/
Black-footed ferret a/ (*Mustela nigripes*)	None in Taos County	Grassland and shrub communities	Sagebrush plain	Federal (E)c// State (Group I) d/
Mink a/ (*Mustela vison energumenos*)	Near Alcalde and near Velarde-Rio Arriba County; near Costilla Creek (Sangre de Cristo Mountains)	Wide variety of habitats; always near water	Ute Mountain, the plain, Rio Grande Gorge	State (Group II)
River otter a/ (*Lutra canadensis sonora*)	Unverified sighting near Rio Arriba/Taos County line--Rio Grande	Rivers and streams	Rio Grande Gorge	State (Group I)
Bald eagle e/ (*Haliaeetus leucocephalus*)	Several verified sightings along Rio Grande Gorge	Rivers and lakes	Rio Grande Gorge	Federal (E)/State (Group II)
Peregrine falcon e/ (*Falco peregrinus anatum*)	Verified in adjacent areas	Cliffs and near water	Ute Mountain and Rio Grande Gorge	Federal (E)/State (Group I)
Sage grouse a/ (*Centrocercus urophasianus*	Questionable sighting near Taos; verified sighting west of Rio Grande	Sagebrush	Sagebrush plain	State (Group I)
Whooping crane e/ (*Grus americana*)	None in Taos County	Marshes, lakes and pools	Rio Grande Gorge (flyway)	Federal (E)/State (Group II)

Source: Adapted from Findley, et al. 1975, Hubbard 1978, and Hubbard, et al. 1978.

Notes:
a/ Verified sightings in close proximity to site.
b/ State (Group II) - Species whose prospects of survival or recruitment within the state may become in jeopardy in the foreseeable future. State preservation of endangered species is mandated by the Wildlife Conservation Act (Secs. 17-2-37 through 17-2-46, NMSA 1978).
c/ Federal (E) - federal endangered.
d/ State (Group I) - Species whose prospects of survival or recruitment in the state are in jeopardy.
e/ Verified sightings in site area.

Bald eagles winter in the immediate vicinity of the site; they may be regularly viewed along the Wild and Scenic River during the winter months. The eagle would probably be limited to the Rio Grande Gorge, whereas the peregrine could potentially use the entire site and occur yearlong. It is unlikely that the falcon currently utilizes the site for breeding, but it is confirmed in an area of close proximity to the site. The whooping crane could occur along the Rio Grande. Use of the site by this bird would likely be greatest during migratory periods and would probably be limited to flight only.

The marten, black-footed ferret, mink, river otter, and sage grouse have potential occurrence in Taos County but are probably too rare to be found on the proposed tailings disposal site. The marten is extremely rare and New Mexico is at the southernmost reaches of its distribution. Most verified records for the black-footed ferret are for the period prior to 1960 and are from the west-central portion of the state (Valencia and McKinley Counties). Likewise, the mink has a pattern of verified records prior to 1960 and has probably experienced a serious population decline in New Mexico. The only recent verified record of the river otter is from the Gila River (Grant County) in 1953. The sage grouse is known only from the Tres Piedras area, although native populations used to occur in the Tierra Amarilla area and an introduced population once occurred near Taos. Ligon (1961) indicates that the area is of marginal suitability for the bird. Of the potentially listable species as identified in the December 30, 1982, Federal Register, none are likely to be impacted.

Formal Section 7 consultation with the U.S. Fish and Wildlife Service has been completed and a "non-jeopardy" opinion rendered for potentially occurring T&E species on the site.

Harvest Species. Terrestrial and avian harvest species on the proposed tailings disposal site include mule deer, elk, bobcat, coyote, grey fox, ringtail, mountain lion, black bear, bandtailed pigeon, and mourning dove. Aquatic harvest species include brown trout, rainbow trout, northern pike, smallmouth bass, and channel catfish.

Special Interest Species. Birds of prey qualify as special interest species. Table 5 indicates the raptors that may use various parts of the site and their typical season of use.

Other species considered as being of special interest in the area of the Guadalupe Mountain site include big game and highly visible passerine bird species. Though big game species are classified as harvest species, on the Guadalupe Mountain site they are also highly desirable for viewing by the recreating public. For the same reason, many passerine bird species can also be considered for this EA as significant species, though they would normally be considered only ecosystem maintenance species.

Ecosystem Maintenance Species

Approximately 80 species occur on or may occur on or near the Guadalupe site. They include such wildlife as amphibians, reptiles, small mammals and non-game fish. Basically, the ecosystem maintenance species in this case consist of the more obscure, less visible fauna.

TABLE 5

RAPTOR OCCURRENCE ON OR NEAR THE GUADALUPE MOUNTAIN SITE

Species	Season of Use
Goshawk	migrant
Sharp-shinned hawk	summer
Copper's hawk	yearlong
Red-tailed hawk	yearlong
Swainson hawk	migrant/summer
Rough-legged hawk	migrant/winter
Ferruginous hawk	yearlong
Golden eagle	yearlong
Bald eagle	migrant/winter
Osprey	migrant/summer
Prairie falcon	yearlong
Peregrine falcon	yearlong
Merlin	migrant
American kestrel	yearlong
Marsh hawk	migrant/winter
Barn owl	summer
Screech owl	winter
Great-horned owl	yearlong
Common raven	yearlong

LIVESTOCK GRAZING

A total of 148 Animal Unit Months is used on the proposed tailings disposal site. The primary use is for cattle during the late fall-winter-spring use period. In most cases, the season of use is closely integrated with the entire livestock business on an annual scheduling basis.

In Figure 4, the impacted allotments are represented. The entire site (1,320 acres) would be fenced in 1985, and grazing use would remain as is until the 1986 use season.

Within the site is one range improvement, authorized under Section 4 of the Taylor Grazing Act of 1934. This earthen livestock reservoir was constructed in 1977.

RECREATION

Guadalupe Mountain is adjacent to the Rio Grande Wild and Scenic River Recreation Area. This segment of the Rio Grande was one of the first eight rivers federally designated on October 2, 1968 for inclusion in the "Wild and Scenic Rivers Act" (Public Law 90-542).

In this Act the Congress declared it "to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."

The Rio Grande Wild River Recreation Area was developed following this designation. This developed recreation area, which lies within 1 1/2 miles of the proposed tailings disposal site, includes 6 major camping areas with 47 shelters, toilet facilities, paved access, drinking water, and a visitor center (refer to Location Map).

The recreation area was also designated in 1981 for inclusion in the National Recreation Trail System. The area contains 12 miles of developed and maintained trails leading from the canyon rim down to the Rio Grande and Red River.

Visitor use at the recreation area has been increasing steadily for the past few years. Table 6 illustrates visitor use at the Rio Grande Wild River Recreation Area from 1975 through 1981.

VISUAL RESOURCES

Guadalupe Mountain contains unique and outstanding scenic values. The mountain provides the highest point of access available to visitors to the area. The views of over 50 miles, including the numerous mountain ranges and the deep chasms of the Rio Grande Gorge, are an integral part of the recreation experience. The steep canyons offer a contrast to the meadows and mountain ridges that provide for primitive recreational opportunities. The various species of wildlife also provide for glimpses of animals in their natural habitat on Guadalupe Mountain.

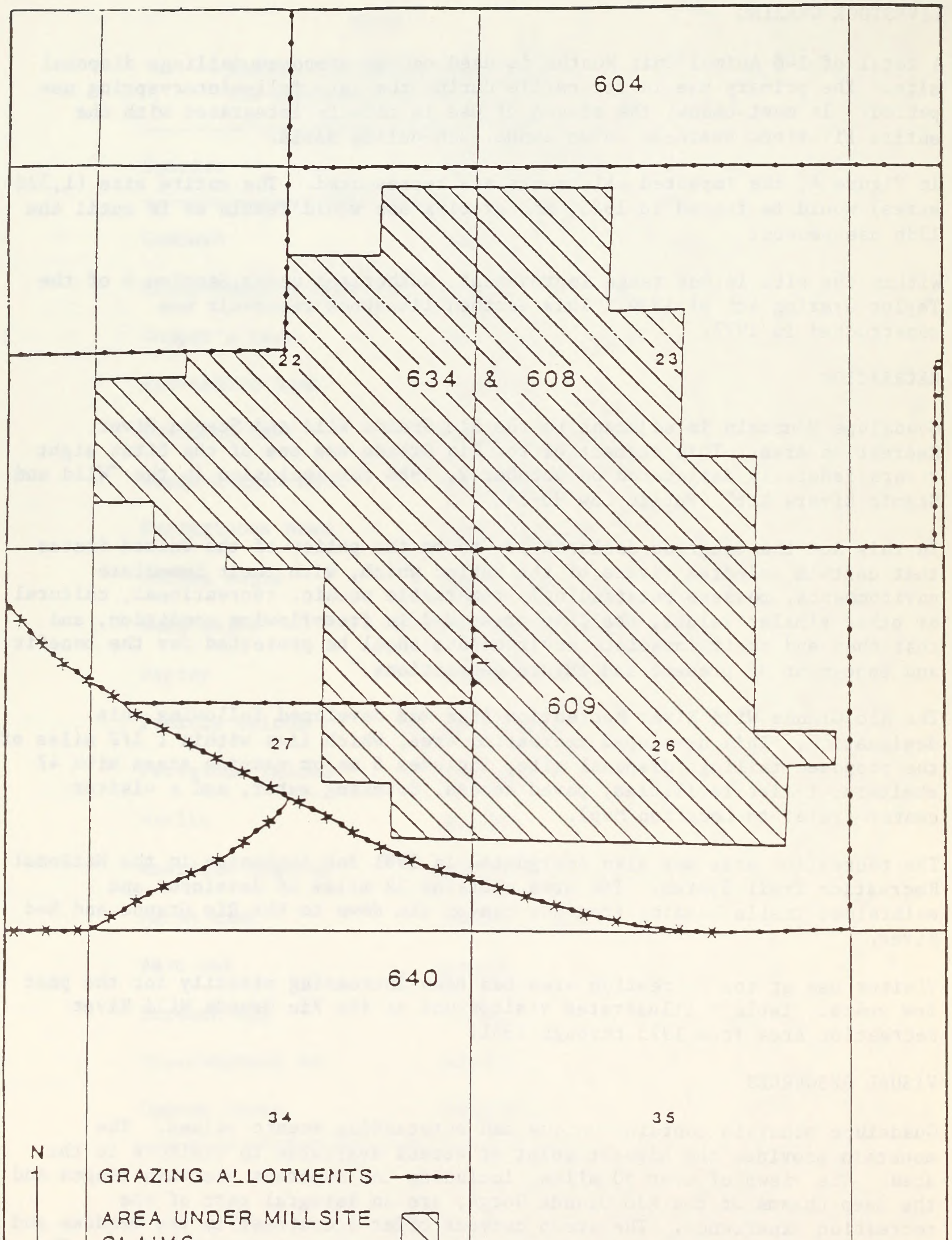

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FIGURE 4

EXISTING GRAZING ALLOTMENTS AND FENCELINES

TABLE 6

VISITOR USE AT THE RIO GRANDE WILD AND SCENIC RIVER RECREATION AREA (VISITORS)

Year	April	May	June	July	August	Sept.	Total
1981	845	1,761	3,205	4,961	4,783	1,821	17,376
1980	521	1,467	3,115	4,890	4,230	1,816	16,039
1979	689	945	2,807	4,912	4,068	1,555	14,976
1978	825	1,106	2,945	5,214	4,162	1,291	15,543
1977	632	1,092	2,684	4,740	3,520	1,064	13,732
1976	488	740	1,216	2,680	2,132	712	7,968
1975	214	325	501	928	864	319	3,151

The inventory/evaluation process for visual resources consists of three assessments: the visual quality of the landscape, the sensitivity of people to changes in the landscape, and the viewing distance. Based on these criteria, and the proximity of Guadalupe Mountain to both a Wild and Scenic River and the federally designated Rio Grande Wild River Recreation Area, the area has been given a Class II rating. This rating allows changes in any of the basic elements (form, line, color, texture) caused by a management activity as long as they are not evident in the characteristic landscape. Contrasts may be seen but must not attract attention.

PALEONTOLOGICAL RESOURCES

No survey has been conducted for the paleontological resources on Guadalupe Mountain, particularly within the immediate vicinity of the proposed tailings disposal site. Because the mountain was created by volcanic activity, which would tend to destroy rather than preserve organic material, no fossil occurrences are expected. Consequently, a paleontological survey is not considered necessary.

CULTURAL RESOURCES

Molycorp funded a survey for cultural resources within the proposed site; the Museum of New Mexico performed the survey during the fall of 1982 and submitted a report of its findings to Molycorp and BLM in January, 1983. The project design for the survey was approved by the BLM and the New Mexico State Historic Preservation Officer. The findings and recommendations submitted by the Museum were reviewed by the BLM and the New Mexico State Historic Preservation Officer. The survey located 11 archaeological sites totalling 365 acres. All 11 sites have Archaic components consistent with the Oshara Tradition (5500 BC - AD 400) as defined by Cynthia Irwin-Williams (1973). Eight of the sites have Basketmaker components dating to AD 1-700. Two sites have Historic period components (1930's), and one site may contain material from the late Paleo-Indian Period (8000 - 6500 BC). Preliminary results indicate that Guadalupe Mountain has been used on a seasonal basis for big game hunting and plant gathering for over 7,000 years. The most intensive use of the area appears to have been during the late Archaic and Basketmaker periods (5500 BC - AD 700).

The sites on Guadalupe Mountain are unusual in the number of formal tools which they include and in the number of stages of stone tool manufacture which are represented. The large number of projectile points present, the presence of hearths, and the occurrence of obsidian suitable for hydration dating provide exceptional chronological control. Because of these factors, the archeological sites on Guadalupe Mountain are extremely important and could eventually prove to be key sites in interpretation of the Archaic Period in northern New Mexico. The BLM and the New Mexico State Historic Preservation Officer have agreed that the eleven sites reported during the survey are eligible for inclusion in the National Register of Historic Places under criterion (d) of National Register eligibility because they are likely to yield significant information about Archaic and Basketmaker period subsistence in the region.

SOCIOLOGY

Attitudes and Expectations

An in-depth analysis on the impacts to the social structure of the community was not conducted by BLM primarily because little or no change is expected to occur as a result of the proposed new tailings facility, inasmuch as the proposed facility is a continuation of an existing operation. A study entitled, Social and Economic Impacts of the Molycorp Questa Underground Project 1982, conducted by Mimbres, Inc. which treats the subject more thoroughly is available at the Taos Resource Area Office.

It is felt, however, that some discussion should be devoted to the attitudes and expectations of the local area residents, particularly those of Questa, in view of some of the controversy from other nearby residents here and elsewhere in the state.

Attitudes regarding the proposal range from total support to total opposition. One group, considering that the major employer and major contributor to the local economy for area residents is Molycorp, favors any reasonable proposal by the company and believes it would be well received and supported by a majority of area residents.

Another is a small group of local residents who have had a negative personal experience either in employment or were related to or knew someone who had been. In between these diverse attitudes is a group of area residents whose position regarding the proposal is neither for nor against.

The main reason for local opposition to the proposal is, in general, related to the existing situation of dusty conditions during windstorms, since the Questa High School is close to the existing tailings pond.

The general expectations of local residents are concerned with maintenance of local economy, employment and general security without having to sacrifice their perceived quality of living conditions.

CHAPTER III

ENVIRONMENTAL CONSEQUENCES

IMPACTS OF THE PROPOSED ACTION

This section describes the impacts that could result from implementation of the Proposed Action. These impacts are those that could occur after implementation of the mitigation measures considered a part of the Proposed Action (refer to Chapter 1). The impact assessment below provides the basis for the development of required mitigation measures necessary to prevent unnecessary and undue degradation of the lands as well as the development of additional recommended mitigation measures. Failure on the part of the operator to agree to the required mitigation measures will cause the plan of operations to be rejected unless the operator can prove, to the BLM's satisfaction, that they are not necessary. Failure to comply with the required mitigation measures after the plan has been approved and the tailings pond is operational would constitute unnecessary and undue degradation of the lands and would subject the operator to appropriate legal action to remedy the situation.

Air Quality

Fugitive dust emissions from the proposed facility may degrade local air quality. In order to determine where the emissions will be transported and what the concentration will be at selected receptor sites, the atmospheric stability of the Guadalupe Mountain site must be determined as well as the physical characteristics of the source material (i.e., specific gravity and grain size). Analysis of such an impact requires data on wind speed and direction and temperature for a period of at least one year. These data are used to model atmospheric condition of the site to determine the probable extent of fugitive dust emissions.

The present tailings ponds are a source of concern for the local population; seven documented violations of state standards occurred in 1981 and 1982, (NMEID Air Quality Bureau Annual Report 1981-1982). However, tailings disposal operations are presently not subject to state permit requirements. (Cecilia Williams, NMEID Air Quality Bureau, 1984). The development of the proposed site and the closing of Section 36 may increase or decrease the present problems.

Water Resources

Surface Water/River System

The impact to the river systems does not appear to be significant. The discharge to the Red River via surface water out of the tailings pond is regulated under an Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) permit, which has recently been renewed. According to Molycorp's plan of operations, the maximum daily discharge limits for molybdenum has been reduced to 23 kilograms per day at a maximum concentration of 2 milligrams per liter as of July 1, 1983. The new ion-exchange plant will reduce the molybdenum concentrations in surface water to permit levels. No violation of the new permit is anticipated due to the development of the Guadalupe Mountain site. Molycorp's consumptive use of water from the Red River is limited to 6.5 cfs by a Stipulation of Feburary 23, 1984, entered into by the State of NM, USA and Molycorp, Inc. and approved by the US District Court on March 2, 1984. Operation of the Guadalupe Mountain site must meet this requirement and seepage which does not return to the Red River is considered to be consumptive use. This stipulation also established instream flow reserved rights for the lower 4 miles of the Red River, and these rights must be considered in the operation of the proposed tailings facility.

The impact of ground water inflow to either the Rio Grande or Red River, assuming a worst case analysis of contamination, will not be significant since low flows in either river (40 cfs in the Red and 200 cfs in the Rio Grande) will provide adequate dilution to the already diluted tailings water (see Table 7).

The impacts of ground water to springs along the wild river is covered under ground water impacts in the following section.

Ground Water

In Appendix IV part B of Molycorp's plan of operations, the consultant's analysis indicated an approximate seepage loss of 4.97 cubic feet per second or 3,600 acre-feet per year for 300 wetted surface acres. This rate was based on a water balance for the existing ponds. The downward seepage of this water is expected to be rapid once it passes through the tailings.

Information provided by the consultants since the plan was submitted (Geocon, December 1983; Vail, January 1984) and subsequent response to BLM questions by Geocon and Water Resources Associates (Molycorp letter of March 13, 1984) reveals that the initial estimate of seepage was higher than that applicable to the Guadalupe Mountain Site. Subsequent review by the consultants indicates that "the base data was misleading in that a substantial amount of the total seepage---resulted from losses in the decant channel and from unlined ponds outside of the tailings disposal area" (Vail, 1984). Both consultants' reports indicate that seepage losses "can be mitigated by --- use of an 'impervious' upstream lining in the design of the main tailings impoundment dams" and transportation of decant water in "lined channel or pipeline" (Geocon, December 1983). Based on these mitigating measures and studies of the existing ponds in Section 36, it is now estimated "that in the worst case scenario" the maximum seepage losses from the Guadalupe Mountain tailings area would be in the range of 1 to 1.5 cfs (Geocon, December 1983).

Since this estimate is based on 400 wetted surface acres, the initial rate of seepage should be lower with the possible exception of a clarification pond lying on an uncoated portion of the area. Seepage should increase in proportion to the pond area (Molycorp letter of March 13, 1984). The mean permeability for the existing tailings was estimated at 2×10^{-5} cm/sec which relates to a seepage loss of 0.0015 cfs/acre (Geocon, December 1983).

The consultants have indicated in both the original plan and subsequent reports that seepage would move vertically downward to the regional water table and then down gradient toward the river system with little vertical mixing. The rate of flow, dilution and filtration can only be approximated without additional information on ground water and formation characteristics (see Unavailable Information).

TABLE 7

COMPARISON OF STATE STANDARDS AND EPA CRITERIA WITH MOLYCORP SEEPAGE (BLM AND EPA MONITORING DATA)

Parameter	Tailings Seepage	Ground Water	Seepage and Ground Water	State Standard Ground a/	State Standard Surface b/	EPA Criteria c/
Criteria						
Cadmium ug/l	1.00	.04	.19	10.	e/	.025
Chromium ug/l	10.00	1.00	2.40	50.	e/	.290
Copper ug/l	40.00	1.00	7.10	1000.	e/	5.600
Cyanide ug/l	22.00	f/	3.40	200.	e/	3.500
Zinc ug/l	40.00	3.60	9.30	10000.	e/	47.000
Iron ug/l	360.00	3.00	5.60	1000.		
Manganese ug/l	1100.00	1.00	172.00	200.		
Molybdenum ug/l	2920.00	4.00	456.00	1000d/		
N total mg/l inorganic	1.31	0.70	.80		1.	
Specific Conductance (umhos)	2000.00	225.00	502.00		400.	
TOC mg/l	7.50	.30	1.40		7.	
SO_4 mg/l	1200.00	21.00	205.00	600.		

Notes:

a/New Mexico Water Quality Control Commission Regulations; July 2, 1981

b/Water Quality Standards for Interstate and Intrastate Streams in New Mexico Part 2-120

c/Water Quality Criteria for freshwater aquatic life as a 24-hour average of total recoverable, assuming a calcium carbonate level of 100 mg/l (Federal Register, November 28, 1980)

d/Standard is for irrigation water supply

e/Value not to exceed 5 percent of the 96-hour LC-50 for organisms present

f/No data, assummed to be below detection level (.1)

An estimate has been made based on the following assumptions to determine the time of travel from the bottom of the tailings pond (after it passes through the tailings) to the river system.

1. The distance from the bottom of the pond to the water table is 650 ft., and the water table lies in the basalt.

2. The permeability of the Guadalupe rhyodacite is 10^{-4}cm (see Geology section).

3. The seepage direction between the base of the pond and the water table is vertical.

4. The hydraulic conductivity of the Servilleta Basalt, through which the ground water passes, from a point below the pond to the river is 10^{-2} cm/sec. (see Geology section.)

5. The ground water flows at right angles to the contours in Figure 1 and travels a distance of 18,000 feet from the water table surface below the proposed facility to the Rio Grande.

6. The portion of the aquifer in which the majority of the ground water is transported is 30 feet in thickness. It could range between 10 and 100 feet.

7. The effective porosity of the transporting zone is 10 percent.

Based on these assumptions the time of travel is 6.28 years through the rhyodacite and .70 years through the basalt. This would total approximately 7 years travel time for the seepage once it passes through the tailings on the bottom of the pond. Given the uncertainties of the assumptions, the above travel time could vary by a factor of 10. This would then give a range of 0.7 years to 70 years. The median estimate would be 7 years.

Molycorps' consultant, Water Resources Associates, has made an analysis of travel time within the regional aquifer from a point below the proposed site to the river system. "The results of these analyses show that the time required for a particle of water to move in the ground water flow system could be on the order of 9 to 57 years depending on the actual material porosity and flow path distance "(Molycorp letter to EID of March 6, 1984, Attachment 2). This estimate should not be considered as a worst case or short duration scenario.

The following assumptions were used in determining dilution and filtration of the tailings seepage as it travels to the river:

1. The ground water inflow on the Rio Grande and Red River between the Chiflo and fish hatchery gaging stations (see Figure 1) is 60 cfs.

2. Fifty percent of the ground water inflow comes from the Guadalupe Mountain side of the rivers.

3. The ground water passes uniformly underneath the surface between the two gauges.

4. The seepage water will mix with 27 percent of the total inflow, based on a projection of the tailings pond area, vertically down to the water table.

5. The seepage will completely mix with this portion of the flow by the time it reaches the river.

6. The rate of seepage is 1.5 cfs based on the maximum estimate from Molycorp's consultant's report.

7. The rapid rate of seepage and ground water movement will allow for little absorption.

8. The quality of the proposed tailings pond water is similar to the effluent of the existing ponds.

9. Groundwater movement is not controlled by local geologic structure (i.e., folds and/or faults).

It should be noted that these assumptions provide neither a best or worst case scenario. Some assumptions, such as #5, are a best case while others, such as #6, are a worst case. These assumptions provide a reasonable basis upon which to estimate impacts to the ground water down gradient from the proposed site.

Using these assumptions we estimate a dilution reduction factor of 6.4; however the range of this factor could range from 2 to 25 depending on the quantity of seepage, degree of mixing, and filtration. In order to determine the concentration of certain toxic metals and other water quality parameters in the ground water after mixing with tailings seepage, the existing groundwater quality must be taken into account. The mixed concentration (Cm) can be calculated using the formula:

$$Cm = \frac{QsCs+QgwCgw}{Qs + Qgw}$$

where Qs = rate of seepage; Cs = concentration of seepage; Qgw = rate of groundwater flow which mixes with the seepage; and Cgw = the concentration in the ground water

This formula was used to calculate the concentration of seepage and groundwater shown in Table 7.

The mathematical calculations used in arriving at the estimated dilution factor are on file in the Taos Resource Area office and are available for public review.

The impact of this groundwater once it reaches the river will depend on the location and concentration of flow and degree of mixing. If it emerges as flow of major springs (e.g., Big Arsenic Spring system) then an adverse effect to this aquatic system is possible.

Comparison of existing groundwater with groundwater after mixing with seepage (see Table 7) shows a significant difference in most parameters. Except for total N and TOC, tailings seepage would be 10 to 100 times greater in concentration for all parameters listed.

Comparison of state ground water standards with tailings water (see Table 7) reveals three constituents whose concentrations are close to these standards. Thus the degree of dilution and filtering is critical to maintain acceptable ground water quality. Constituents that may exceed ground water standards are manganese, molybdenum and sulfate.

Since ground water contributing to springs and seeps may be affected by tailings seepage, state surface water standards must be considered as these springs are high quality tributaries to the Rio Grande. The specific standards are contained in Water Quality Standards for Interstate and Intrastate Streams in New Mexico, New Mexico Water Quality Control Commission. These regulations contain general as well as specific standards which may be exceeded due to seepage impacts to the source of the spring flow (ground water passing under or around Guadalupe Mountain). Under the category of Hazardous Substances are heavy metals whose concentration may not exceed certain biological impact levels. Several tailings effluent constituents which could be considered as hazardous for the purposes of this standard are included in Table 7. The concentration standard for these constituents is 5 percent of the 96-hour LC-50 for aquatic life. The aquatic life of springs along the wild river have not been completely inventoried and appropriate literature review and laboratory tests will need to be performed. An additional criterion of these standards which may be applied prevents degradation of waters in designated parks and wildlife refuges (Section 1-10). This criterion was referenced in an EID letter to Molycorp regarding the discharge plan for the proposed site. (See EID letter of August 17, 1983,in Appendix F).

A study on effluent toxicity has recently been done for Molycorp by Analytical Bio-Chemistry Laboratories, Inc. (Acute Toxicity of Effluent 001 and 002 to Daphnia Magna, May 24, 1984). This study indicates the tailings water may not be acutely toxic to the aquatic life of the spring ecosystem based on having no acute effect to Daphnia. However, their study does not address long term chronic effects of these substances. The determination as to the adequacy of this study to verify compliance with state standards rest with EID. Whether such studies assure that unnecessary and undue environmental degradation will not occur will depend on the outcome of this determination.

Since the state standard for toxic elements has not been defined for the spring ecosystem in question the best guideline for the determination of impacts are the EPA criteria for fresh water aquatic life (Federal Register November 28, 1980). Comparison of these criteria with mixed ground and seepage water reveals several parameters whose concentration is potentially in excess of the criteria values (see Table 7). Cadmium, chromium, are approximately 10 times the EPA criteria; copper and cyanide are close to the criteria. The potential impact of these concentrations will be discussed in the Wildlife section.

Under part 2-120 of these regulations are specific standards which would apply to the springs. Where these standards might be exceeded, they are included in Table 7. Total nitrogen may be exceeded unless reduced by absorption and specific conductance may be increased to above the standard.

Topography

Implementation of the Proposed Action will result in the permanent alteration of some 800 acres of land on Guadalupe Mountain. As illustrated on the Location Map, construction of the two tailings dams will block both ends of the saddle, thus creating an impoundment area that will be filled with some 200 million tons of tailings. Filling of the impoundment will ultimately modify the saddle by raising its floor 300 to 380 feet. This will result in a significant impact to visual resources (refer to the Recreation section).

Geology

Implementation of the Proposed Action will result in minor impacts to the geologic resources, consisting largely of the displacement of moderately large amounts of geologic material and inducing strain on the bedrock (probably causing some fracturing) as a result of blasting. Initial construction will involve 2 to 3 million cubic yards of material (both rock and fill), which will be obtained from the saddle. Ultimately, an estimated 20 to 25 million cubic yards will be required to construct the two dams to their full heights of 300 - 400 feet. Molycorp has indicated that it will excavate additional material for each stage of construction and will obtain as much material as possible from the saddle; if additional material is needed, it will be hauled to the site from Molycorp's private property in the Questa area.

Since the proposed project would involve substantial amounts of water, some downward seepage is expected to occur, in spite of the fact that tailings do tend to seal themselves, and most of the water will be collected and returned to the Red River. Given the relatively high permeability of the underlying rhyodacite and basalt, seepage water is expected to percolate downward to the regional water table, thereby affecting the ground water. A more detailed assessment of ground water impacts is found in the Water Resources section.

Soils

The Proposed Action will destroy the soil profile. Isolated areas outside the immediate construction area may be expected to remain undamaged.

Vegetation

The Proposed Action will result in the removal of all woodland and timber products from the site. However, use of the existing products will be maximized by the federal government and the public. Woodland products sales will include fuelwood, posts, Christmas trees and wildlings. Timber species will be salvaged for commercial sawtimber through advertised timber sales. Timber species too small or of inferior quality for sawtimber will be sold as fuelwood products. Molycorp, under the authority granted by the General Mining Law of 1872, may use wood products directly at the disposal site. However, this use is not anticipated. During construction and operation, vegetation will be lost. After abandonment, reclamation will be implemented and the site will be revegetated.

Wildlife

Development of the 1,320-acre site will virtually eliminate all of the current uses by wildlife for the duration of the project. Most small mammal species that typically take refuge underground when disturbed will be destroyed by the bulldozing and other mechanical activity in the area. Nesting avian species will also be destroyed if tree removal is done during nesting season. Other species that will be killed will include any reptiles without adequate escape abilities. This directly impacted area will be permanently altered with regard to landform and habitat characteristics.

The indirect impacts of the project will occur to both the terrestrial and aquatic resources, but the exact extent of the impacts is uncertain. Groups of species will be affected at various levels according to their sensitivity to the disturbance. For example, small mammal species will probably not be displaced for any great distances from the directly impacted area. Avian species will probably be displaced to a greater degree, while extensive displacement is expected for species such as mule deer, elk, mountain lion, black bear, bobcat and fox.

Harvest species such as elk (a few animals have only recently become established as year-round residents), black bear and mountain lion will probably be eliminated from the indirectly affected area for the duration of the project. Mule deer numbers will decrease over time. Visibility of mule deer in the recreation area should actually increase for the first year or two of the project as they are displaced by the disturbance of the Proposed Action. After the first few years, visibility of deer will probably decrease until reclamation is completed and habitat privacy restored. Populations should eventually recover depending on how well reclamation is performed and what activities occur on the tailings site after it has been abandoned.

The following discussion explains the importance and necessity of adequate capping and reclamation of the tailings site. Toxic elements such as selenium, molybdenum, arsenic and vanadium are present in many tailings (Dreesen et al. 1978, Rangeland Resources International, Inc. 1978). Although selenium and molybdenum are essential elements in the diets of livestock, only very small amounts are required (0.1 mg/kg or less, dry matter basis--National Academy of Sciences 1976). Selenium has been identified as an essential trace element in the diets of cattle, sheep, swine, horses, chickens, turkeys, quail, and dogs (National Academy of Sciences 1971).

Kelly (1979) found that vegetation grown on uranium tailings piles in New Mexico contains higher concentrations of selenium, arsenic, lead, and copper than vegetation growing on adjacent rangeland. For example, bottlebrush squirreltail from tailings piles contains selenium in concentrations averaging as high as 60.9 parts per million (ppm), while on adjacent rangeland 1.9 ppm has been the maximum concentration found in the same plant species. Likewise, alkali sacaton and fourwing saltbush from tailings contain selenium concentrations of 4.3 and 3.6 ppm respectively, while 0.3 and 0.8 ppm have been the highest reported for these species on nearby rangeland.

When these elements migrate into the soil, their uptake by vegetation is of considerable significance to foodchains (Dreesen et al. 1978). In herbivore foodchains, problems of toxicity and further bioaccumulation become significant. Molybdenosis has been diagnosed in cattle grazing in uranium mining areas in Texas (Dollahaite et al. 1972), and selenium poisoning is suspected to be responsible for sheep mortalities in a uranium ore outcrop area in New Mexico (Rapaport 1963). Selenium toxicity may occur when livestock consume forage containing 10 to 30 ppm selenium (National Academy of Sciences 1976). It is possible that wildlife such as deer, elk, rabbits, and rodents could be similarly affected. However, more research needs to be done before conclusions can be made.

The uptake of contaminants by vegetation, the consumption of this vegetation by wildlife, and the consumption of wildlife by people also may be a significant transport process. Dreesen et al. (1978) state, however, that uptake by vegetation is probably a minor transport process when compared to the erosion of bare tailings. If the soil cover over a tailings pile is deep enough to prevent root penetration into the tailings, no contamination uptake should occur.

The possibility of small mammals or other burrowing animals digging into tailings piles, and their possible contamination and spread into the food chain, deserves consideration. Anaconda Company has conducted some research on this subject, but results are not yet available to the public. Adequate capping will also eliminate this problem.

The analysis of typical tailings (presented in Molycorp's plan of operations) could vary now that underground mining is occurring, because ore materials are being taken from different locations. For example, certain elements such as selenium (currently below harmful dry sample concentrations) could increase with ore from a new location. Inadequate dry sample information exists to determine plant uptake abilities for elements typical in a molybdenum mine.

Although long term benefits to terrestrial wildlife are not likely, an adequate effort in reclamation could eventually restore the total productivity of the area to somewhere near its existing state. Reclamation of some sites have actually improved forage conditions when proper techniques and species are used and the necessary precautions are taken to prevent overgrazing (Aldon and Garcia 1971, Aldon 1978).

The effects on aquatic habitat (such as seeps and springs) and the condition of the existing aquatic organisms is highly uncertain; however, a number of possibilities exist concerning potential impacts to the habitat and/or organisms themselves. These impacts would be caused by the presence of several contaminants which could exceed the EPA Criteria for the protection of fresh water aquatic organisms (see Table 7). These include cadmium, chromium, copper and cyanide. Cadmium and chromium are anticipated to exceed the EPA criteria by approximately ten (10) times.

Acute toxic effects to the aquatic organisms in the spring systems will probably not occur. Toxicity tests on Daphnia conducted by Analytical Biochemistry Laboratories discovered no acute effects over a 48 hour period. This would seem to indicate that impacts would be similar for the organisms in the spring systems and that acute toxic effects on the spring organisms would probably not occur, as there were no recorded mortalities even with the undiluted tailings effluent.

Daphnia is also one of the more sensitive species to cadmium. However, insects and invertebrates are most sensitive during molting, which usually does not occur among most individuals during tests lasting 96 hours or less.

Long term chronic effects are still a potential which should be considered and could result in adverse impacts to the existing populations of aquatic macroinvertebrates, There are, however, several variables which make a prediction of potential chronic effects extremely difficult. First of all, the exact amount of dilution is unknown. A best case scenario for chromium and cadmium, for example, would approximate or slightly exceed the EPA criteria, in which case little or no impact would occur. In a worst case scenario, however, the EPA criteria could be exceeded by as much as thirty (30) times, assuming the water hardness remains relatively constant. Another variable is the synergistic effects that are possible by the presence of two or more pollutants. Pollutants in combination may have different or increased toxic effects due to the additive properties. Without organism-specific tests with the anticipated combinations and levels of pollutants, the impacts can not be reasonably assessed. In other words, the degree to which aquatic life would be damaged or eliminated is unknown. It would be reasonable, however, to expect that a reduction in the population of the easily stressed or non-tolerant species is possible. It can also be expected that the existing species in the spring systems will each have their own degree of tolerence. In summary, a reduction of species diversity of aquatic organisms could occur in the springs.

Changes in nutrient levels may also cause changes in species diversity. The organisms not adversely affected by pollutant action could respond to the nutrient loading with increased numbers, size, and/or composition.

Aquatic plants are expected to respond to the increased nutrients. This could result in increased numbers, size and a change in composition. No adverse response is expected, as contaminant concentrations required to damage plant growth significantly exceed levels required to damage macroinvertebrates populations and the levels anticipated as a result of the proposed action.

Livestock Grazing

Three livestock permittees will be directly affected by the Proposed Action. Reductions ranging from 20 percent to 71 percent may be expected. Table 8 summarizes the Animal Unit Month (AUM) reductions that will occur.

TABLE 8

REDUCTIONS IN GRAZING PRIVILEGES
ON THE PROPOSED TAILINGS DISPOSAL SITE

Allotment Number	AUMs Before Construction	AUMs After Construction	Percent Loss
608	210	148	30
609	30	9	71
634	250	200	20

The effect upon the livestock operations will be contingent upon the individuals' ability to adjust to the reductions. The loss of grazing privileges may impact the financial solvency of some enterprises.

The only range improvement affected will be a dirt tank, which will be buried beneath the west dam.

Recreation

Implementation of the Proposed Action will result in the following impacts to the Rio Grande Wild River Recreation Area.

Noise

This impact will result from blasting and crushing to obtain the proper size fill material for the two dam structures, and from vehicles and heavy equipment used for hauling fill material to the two dam sites. A noise survey was conducted on September 27, 1982 by the New Mexico Environmental Improvement Division, which measured the noise generated by the detonation of 10 pounds of TNT at the blast site and at Chiflo campground, 2.08 miles away. The maximum anticipated noise level, assuming a 1,000-pound charge of TNT and a burial depth of 120 feet, would be 125 decibels (± 5 decibels) at the blast site, and 53 decibels (± 5 decibels) at the Chiflo campground. The noise level at the construction site will be substantially higher than the present ambient noise level (approximately 41 decibels) but within safety limits established by the Mine Safety and Health Administration. The noise level at Chiflo campground, which has an ambient noise level of 32 to 42 decibels, will be within tolerable limits.

Dust

This impact will result from blasting during dam construction and from dry tailings during operation. During the operation phase, dust from the tailings pond will periodically limit views of the Sangre de Cristo Mountains from the Rio Grande Recreation Area.

Access

The Proposed Action will result in a reduction of access to Guadalupe Mountain for recreation use, including hiking, camping, ORV use, cross-country skiing and hunting.

Visual Resources

Construction of the tailings facility (with its accompanying dust) and completion of the west dam face will create a constant visual intrusion within the recreation area.

Cultural Resources

All archaeological sites within the proposed tailings disposal site will be destroyed by construction and maintenance of the pond, dams, fencing, and associated structures, or by burial under the estimated 200 million tons of tailings. Site preservation will not be possible. The BLM and the New Mexico State Historic Preservation Officer have determined that the archaeological sites recorded on Guadalupe Mountain are eligible for inclusion in the National Register of Historic Places only under criterion (d). The sites have no architectural significance, no value for preservation and interpretation in place, nor any apparent heritage association with existing Indian groups. Therefore, recovery of the valuable aspect of the sites, their scientific information, prior to disturbance is possible. Complete data recovery, i.e., collection of every artifact and exhaustive study of every site, does not appear to be possible given the surprising quantity of archaeological material described in the survey report.

A sampling of the archaeological sites through selective artifact collection and site feature studies appears to be the most probable approach. Because the proposed action is governed by 43 CFR 3809. Possible treatment of the cultural resources in the project area include the following: (1) No mitigation, (2) partial mitigation, and (3) full mitigation. Whichever option is selected will be done in compliance with 36 CFR 800 regulations, including consultation with the New Mexico State Historic Preservation Officer and, if necessary, the Advisory Council on Historic Preservation.

REQUIRED MITIGATION MEASURES

These migitation measures are considered necessary to prevent unnecessary and undue degradation of the public lands. Therefore, they will be included, along with those mitigation measures considered a part of the proposed action (refer to Chapter 1), as final stipulations to the approved plan of operations.

1. Due to the potential for ground water contamination that could pose a threat to existing high-quality wells, springs and seeps, the following mitigation plan is required.

The tailings impoundment will be designed and operated to reduce seepage to the level anticipated by Molycorp consultants of 0.5 - 1.5 cfs (Geocon, December, 1983). This is a level at which adverse effect, if any, will be minimized and at the same time is indicated to be feasible with appropriate design and operation.

Since accurate measurement of seepage is not possible, only a qualitative estimate can be made based on reports required of Molycorp by the New Mexico State Engineer. Such report will be reviewed to determine if seepage is within the above range (see monitoring).

b. Special spigotting of tailings early in the life of the tailings project will be done to cover the fringe areas of the pond that are against uncoated surface to minimize seepage further.

c. Sand produced from cyclone tailings separation will be used in the construction of the west dam to increase the slimes content of the tailings in storage and minimize the permeability of the tailings, thereby further minimizing tailings seepage.

d. The groundwater downgradient (west and southwest) of the site will be monitored quarterly to provide early detection of pollution. Monitoring would be done through a series of wells encompassing the possible directions of movement toward the Wild and Scenic River and in line with the projected gradient.

e. The BLM, in consultation with the EID, the EPA, and the USFWS and the NMG&F, will establish parameters to be monitored and significance levels for these parameters. Molycorp will be responsible for implementation of the monitoring plans.

f. In the event that ground water downgradient of the site was found to exceed any significance level, the company will be responsible for implementing immediate (within 30 days) mitigation.

This mitigation measure (#1) may be revised or deleted in whole or in part at the discretion of the authorized officer of the BLM should the groundwater discharge permit of the New Mexico EID prevent unnecessary and undue degradation of the springs and seeps along the Rio Grande Wild and Scenic River. This determination may take into account new information provided by groundwater and toxicity studies.

2. The BLM, in consultation with the New Mexico State Historic Preservation Officer, will develop a data recovery program adequate to retrieve the valuable information contained in the eleven Register eligible sites. Approval of the mitigation plan will be completed prior to approval of the plan of operations. No surface disturbance will be allowed until mitigation has been completed as outlined in the approved mitigation plan. (See Appendix G).

3. Molycorp will provide well data and test hole boring logs to BLM in order to assist us in monitoring hydrology conditions. If Molycorp drills any wells, logs will be submitted to BLM.

4. The wildlife management plan as committed to by Molycorp will include any aquatic or terrestrial wildlife habitat components affected by the project. It may also include any terrestrial or aquatic monitoring programs, in which case the appropriate agency will be assigned the lead. This plan will be prepared by the BLM, U.S. Fish and Wildlife Service, the N.M. Department of Game and Fish, and Molycorp. Coordination for the preparation of the plan will be the responsibility of the BLM. Molycorp will be responsible for any project implementation called for by the plan. This plan will be completed by June 1, 1985, will be of an ongoing nature and will be reviewed and/or revised at least once each year for the duration of the project.

5. In order to mitigate potential excessive noise that impacts visitors at the recreation area, a cooperative effort between the BLM and Molycorp will be in effect. Effort will be made to reduce, as much as possible, the noise levels at the recreation area to a recommended level of 50 decibels, and maintain the natural sounds of the wild river. This level will be monitored and maintained from the Chiflo campground. Specific mitigation measures to be considered include the following:

    a. All blasting and construction work at the site will be done during weekday periods from May through October, between the hours of 8 a.m. and 6 p.m.

    b. During the fall and winter months, blasting will be done between 12 noon and 6 p.m. to avoid the sharp noise levels caused by air inversions over Guadalupe Mountain.

    c. To reduce road surface wear and vehicle noise on the road to the recreation area (west side of Guadalupe Mountain), access for construction vehicles to the new tailings disposal site will be limited to the east side of Guadalupe Mountain.

    d. Vegetation disturbances between the west dam face and the recreation area will be minimized to maintain noise absorption between the source and the listeners.

6. A reclamation plan will be developed by BLM and Molycorp in accordance with the requirements of 43 CFR 3809.1-3(d)(4)(i)-(v). In addition, the following reclamation measures will be required:

    -Raw tailings capped to a depth of 1.5 - 3 feet.

    -Revegetation will be done with native woodland and shrub species.

    Additional reclamation measures will be developed after completion of ongoing studies and prior to time of abandonment.

RECOMMENDED MITIGATION MEASURES

These migitation measures are not considered necessary to prevent unnecessary and undue degradation of the public lands. They are, however, considered necessary to manage the other resources and will be negotiated with Molycorp at the time the plan of operations is approved. Those measures Molycorp accepts will be included as final stipulations to the approved plan of operations, along with the Required Mitigation Measures and those measures considered a part of the proposed action.

1. Woodland and timber sales will be coordinated by the BLM and Molycorp to ensure that the salvage is complete and wood products are not damaged by Molycorp.
2. In order to provide a natural buffer to reduce noise impacts to habitat privacy, any unnecessary removal of trees or vegetation on the west side of the site will not be allowed.
3. The inverted umbrella (wildlife watering device) within the site will be dismantled, removed and reinstalled by Molycorp. The new location will be selected by the BLM and will be located in a needed area as close as possible to the existing location.
4. In order to reduce visual impacts and preserve habitat privacy, construction material will not be obtained from the west side of Guadalupe Mountain.
5. The visual impacts of the two 300 to 400-foot rock filled dams can be partially mitigated by reseeding with natural grasses on the face of the dams. Any man-made structures will be mitigated in accordance with Class II visual resource management guidelines, which require that any change in the basic elements (form, line, color and texture) caused by a proposed activity will not be evident in the characteristic landscape. Contrasts may be seen, but will not attract attention. Earth-tone colors will be used in all necessary painting of structures, and placement will follow the natural contour of the terrain.
6. The Guadalupe tailings facility will be reclaimed as soon as possible after abandonment to provide a woodland habitat type. Crown cover densities will be prescribed in the wildlife habitat plan, which is included as part of the proposed action in Chapter 1.
7. Molycorp will purchase and transfer to public ownership replacement habitat equal or simular to the acreage and/or wildlife values affected by the proposed action on the Guadalupe Mountain Site. The replacement habitat will serve as mitigation for lost habitat and site selection will be subject to BLM and USFWS approval.

MONITORING

Air quality should be monitored to the east and west of the site as soon as the plan is approved. Location of the monitoring stations and frequency of sampling should be decided in consultation with the New Mexico EID Air Quality Bureau.

The BLM, in consultation with the EID, the EPA and the USFWS should develop baseline data for ground water. Parameters to be measured would include all toxic materials, plus manganese and molybdenum, listed in EPA water quality criteria. The wells and springs depicted in Figure 1 (Chapter 2) would be sampled semiannually beginning in 1985 until tailings disposal at the new site begins, when the frequency would be increased to quarterly. The BLM may obtain copies of reports made to the New Mexico State Engineer which estimates water seepage losses from the proposed tailings facility. Such reports allow only an estimate of the actual seepage due to unquantifiable losses which occur in this type of operation.

This monitoring provision may be revised or deleted in whole or in part at the discretion of the authorized officer of the BLM should the monitoring provisions of the water discharge permit of the New Mexico EID meet the objective of the above monitoring plan. This determination may take into account new information provided by groundwater and toxicity studies that could show such monitoring is not required.

Noise level and quality will be monitored during construction, a minimum of twice a year during summer and winter to evaluate the impact of construction activity on the natural sounds of the wild river at the Chiflo Campground.

CHAPTER IV

CONSULTATION AND COORDINATION

INTRODUCTION

This chapter describes the consultation and coordination that took place during preparation of this Environmental Assessment (EA). Actions taken to achieve coordination include scoping, agency contact (federal and state), and contact with special interest groups.

SCOPING MEETINGS

Scoping meetings were held in the "open house" format to provide the public an opportunity to identify concerns they feel should be addressed in this EA. These day-long open houses were held in Taos (BLM office) and Questa (St.Anthony Parish Hall) on August 10, 1982. Sign-in attendance was 12 people in Taos and 24 in Questa, for a total of 36.

The majority of the attendees registered as private citizens, but others were affiliated with special interest groups. (Refer to Appendix E for the names of all attendees. The various concerns that were raised are listed in this Appendix. They are not listed in any priority or sequential order, but as they were identified during the meetings.)

AGENCY CONTACT

Federal Agencies

U.S. Fish and Wildlife Service

Formal consultation under Section 7 of the Endangered Species Act has been completed.

State Agencies

Environmental Improvement Division

Informal coordination meetings to discuss air quality and water quality considerations were held in Santa Fe, New Mexico.

New Mexico Department of Game and Fish

Informal coordination meetings were conducted regarding threatened and endangered species and habitat impacts.

CONTACTS WITH SPECIAL INTEREST GROUPS

Informal meetings were held with various representatives of the Sierra Club, the New Mexico Citizens for Clean Air and Water (NMCCAW), the Concerned Citizens Committee (CCC), and the Taos Environmental Association (TEA). The concerns of these groups were for air and water quality, wildlife, social considerations, and technical legalities regarding the 1872 Mining Law and the 3809 Regulations.

REVIEW OF THE DEA

The Draft Environmental Assessment (DEA) was made available to the public on February 25, 1983. A notice of availability was published March 3, 1983, and carried on the radio. Copies were mailed to the public March 1. The comment period was initially scheduled to close April 11, but was extended to April 22, 1983. Approximately 100 copies were distributed to the public, local, state and federal agencies. Table 9 lists the organizations that received the document.

An "open-house" opportunity was also provided on March 15, to clarify or answer any questions that reviewers may have had.

PREPARERS OF THE EA

Table 10 lists those BLM personnel who prepared this FEA.

PUBLIC COMMENTS AND RESPONSES

During the public review period, 15 comment letters were received. (Refer to Table 11 for a list of these letters and the major areas of concern expressed in them.) Each letter was reviewed to determine if it met the criterion required for response in the FEA, that is, whether or not it discussed the adequacy of the DEA. Comments that presented new data, questioned facts and/or analyses, or commented on the issues bearing directly on the DEA or the environmental impacts of the Proposed Action and alternatives were fully evaluated and responded to. Changes or additions to the text of the DEA have been incorporated into the FEA. Letters received after the close of the comment period were considered in discussing impacts in the FEA but were not specifically responded to; all comment letters are available in the Taos Resource Area for public review.

Copies of the comment letters and the responses to the comments follow Table 11. Comments are keyed to the control number of the letter in which they appear (comment A-4 is the fourth comment in letter A). The responses, in some cases, go beyond the scope of the specific comment, in order to adequately cover other related comments and to maximize the cross-referencing of responses.

TABLE 9

DOCUMENT RECIPIENTS

Federal Government

Department of the Interior (Taos)
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

Environmental Protection Agency

Mine Safety and Health Administration

State Government

New Mexico Department of Game and Fish

New Mexico Environmental Improvement Division

New Mexico State Historic Preservation Officer

New Mexico Water Quality Control Commission

Wyoming Department of Environmental Quality

Private Groups

American Citizens Together

The Harwood Library (Taos)

New Mexico Conservation Coordinating Council

New Mexico Natural History Institute

Sierra Club (New Mexico Chapter)

N.M. Citizens for Clean Air and Water

TABLE 10

LIST OF PREPARERS OF FINAL EA

Name	Job Title	Assignment
John Foster	Range Conservationist	Soils, Vegetation, Livestock Grazing, Prime and Unique Farmland
Bill Holsheimer	Geologist	Team Leader, Topography, Geology, Paleontological Resources
Ben Kuykendall	Wildlife Biologist	Wildlife, T & E Species
Tom Mottl	Hydrologist	Water Quality, Air Quality, Floodplain/ Flood Hazard Evaluation
Darrell Musick	Natural Resource Specialist	Vegetation (Timber)
Paul Williams	Archeologist	Cultural Resources
Irene Rivera	Word Processor	Typing
Dolores Jeantette	Word Processor	Typing
Richard Speegle	Supervisory Outdoor Recreation Planner	Recreation, Noise, Wild and Scenic Rivers, Visual Resources

TABLE 11

COMMENT LETTERS RECEIVED AND AREAS OF CONCERN

Letter	Agency or Individual	No Response Necessary	Air Quality	Water Quality	Topography	Ecology	Vegetation	Wildlife	Livestock Grazing	Recreation	Visual Resources	Cultural Resources	General
A	Mine & Safety Health Admin.												X
B	Concerned Citizens of Questa	X											
C	Carson National Forest	X											
D	R. L. McCollum			X									X
E	Jay B. Sorenson												X
F	Grove Burnett		X	X				X					X
G	New Mexico State Planning Division	X											
H	R. H. Hogrefe			X									X
J	U.S. Fish & Wildlife Service			X				X					
K	New Mexico Natural History Institute												X
L	Gary & Donna Storch			X				X					X
M	New Mexico Dept. of Game & Fish			X			X	X					X
N	Michael E. Archuleta			X									
O	Southwest Research & Information Center		X	X		X		X		X	X	X	X
P	Dane Myers	X											

March 14, 1983

Richard C. Niemeyer
Taos Resource Manager
Bureau of Land Management
Post Office Box 1045
Taos, New Mexico 87571

Attention: Bill Holsheimer

Dear Mr. Niemeyer:

As requested by your letter of March 1, 1983, this office has reviewed the Bureau of Land Management's Environmental Assessment (EA) report for the proposed Guadalupe Mountain molybdenum tailings disposal facility. Our review was principally conducted by Stephen W. Dmytriw, Civil Engineer. Our comments are as follows:

A-1 1. All pertinent environmental considerations appear to have been adequately addressed; however, the report was unclear (in our opinion) as to any penalty to be assessed for failure to comply with established water quality standards.

A-2 2. The recommendation to "seal" the upstream face(s) of the dam(s) to prevent (reduce) seepage is an excellent idea. The concept could be expanded to include lining the entire reservoir area and/or the installation of a well capture-pumpback system.

A-3 3. The planting of shrubs in small pockets on the dam face may be attractive, but could be dangerous. Water loving plants with deep root systems can easily create piping problems when planted on dam embankments.

A-4 4. According to the EA report, it is the State Engineer's responsibility to determine the embankment's stability and conduct a stability analysis once the dam is built. Other technical considerations affecting the integrity (safety) of the facility which should be investigated include, but are not limited to, hydrologic and hydraulic criteria; underseepage, hydraulic fracturing, and uplift; seismology and liquefaction; and construction specifications and inspection.

The Mine Waste and Construction Division provides technical reviews of tailings disposal facilities for MSHA enforcement managers on a routine basis. We would be happy to provide you with this service after the facility's design is finalized. The Division does not maintain a construction inspection force; however, we do perform periodic field construction reviews on an as-required basis.

MAR 18 1983

A-1 Failure to comply with established water quality standards constitutes "unnecessary and undue environmental degradation". Should this situation occur, Molycorp will be given 30 days to bring the water quality of its operation up to standards. If this does not happen, the tailings pond will be shut down (via a court injunction) until the water quality standards are met.

A-2 Since the Draft EA was issued, Molycorp has agreed to line the internal faces of both dams with an impervious membrane. Consequently, this recommended mitigation measure is now part of the proposed action (see also Chapter 1 of the Final EA, MITIGATING MEASURES THAT ARE PART OF THE PROPOSED ACTION). BLM has not required that Molycorp line the entire reservoir area, nor have we required the installation of a capture - pumpback system. We have, however, required that the tailings pond be constructed and operated to reduce seepage to a level that will minimize any adverse effect. See also Required Measures, Chapter 3 of the Final EA.

A-3 This mitigation measure has been deleted in the Final EA.

A-4 The State Engineer's Office will review all designs and analyses prior to issuance of a permit to construct the tailings dams. Any information deemed necessary to determine the safety of the dams will be required at that time. See also Chapter 1, Authorizing Actions/Regulatory Laws and Authorities.

As a matter of interest, the February 1983 Federal Emergency Management Agency newsletter, "FEMA Forum," contains summarized recommendations from the U.S. Army Corps of Engineers with regard to the National Program of Non-Federal Dam Inspection. Point No. 4 of the recommendation package suggests that facilities such as Guadalupe Mountain be "... designed and constructed to meet minimum standards established by a designated Federal agency. . ." You may wish to consider this recommendation in your final permitting of the proposed facility. A copy of the FEMA newsletter is enclosed for your information.

If this office can be of further assistance, please contact either myself or Mr. [illegible].

Sincerely,

[illegible] L. [illegible]
Chief, Mine Waste and
Construction Division
Safety & Health Technology Center

Enclosure

March 29, 1983

MR. Richard C. Niemeyer
Taos Area Resource Mgr.
Bureau of Land Management
Taos, New Mexico 87571

RE: Environmental Impact Statement -- Guadalupe Mountain
Site --Tailings Disposal Dump,Union/Molycorp

Dear Mr. Niemeyer,

We have reviewed the Environmental Impact Statement (E.I.S.) on the Guadalupe Mountain tailings disposal area, attended the "open-house" sponsored by your office on the project and discussed it at length with officials from your office.

We are greatly concerned at the magnitude of the proposed project and the enormous risks it will pose to the environment in and around Questa. We are committed to the protection of Air, Land,and Water quality and the environment as a whole. We are particularly concerned about dust blown tailings,as we have now, and the potential for wholesale pollution from the proposed Guadalupe Mt. site.

B-1

It was also noted that your office,Mr. Neimeyer, has determined that there is no need for a reclaimation bond or for a reclaimation plan, or that one is ~~not~~ warranted. As you are aware of,there now exists over (600)acres of formeraly B.L.M. land, for which a reclaimation plan was not requested by anyone, and now poses one of the greatest threats to the health and well being of this community and in particular,high school students. This acreage was identified as turquoise recreational lake.The B.L.M.'s assurance:that the guadalupe site will not affect the human environment,significantly, inspires very little confidence.

R-1 The contention that a reclamation plan will not be required for the Molycorp tailings disposal project is incorrect. A reclamation plan, consistent with the requirements of 43 CFR 3809.1-3(d)(4)(i)-(v), will be developed by Molycorp and BLM and is a pre-condition for approval of the plan of operations.

Some form of reclamation guarantee will be obtained from either Molycorp or its parent company, Union Oil. However, it is presently uncertain if this will be in the form of a reclamation bond or certificate of financial responsibility.

[illegible] of irrigation ditch(s) in Questa(acequias),and the refusal of several Questa property owners to renew land leases with Moly/corp., after said lands were subjected to a most devastating environmental assault, and after several environmental groups effectuated a federal court judgement under the clean water Act, we urge the Bureau of Land Management to obtain,from Moly/corp., the full and exact compliance under the Air,Water quality Acts,as well as the National Environmental Protection Agency (NEPA). These laws require nothing less,and your responsibility as a trustee of public lands requires that you rigorously explore and objectiveley evaluate this project.

We cannot stand by and permit a project of this immense scope-permeated with vast inherent problems- to be implemented on the basis of Moly/corp's self serving needs. We insist that your department , exercise its responsibilities to insure that disasterous environmental degredation cannot possibly result from this project.

Please be advised that we will seek appropriate releif, with the help of Mr. Grove Burnett; The Sierra Club,and others,in any legal way possible to insure that the Village Of Questa,will not be subjected to another "turquoise lake".

Sincerely,
Robert Vigil Manuel R. Ortega Joe Cisneros
Messrs. Robert Vigil-Manuel R. Ortega-Joe Cisneros
Concerned Citizens of Questa
P.O. BOX 333
Questa, New Mexico 87556

United States Department of Agriculture
Forest Service
Carson National Forest
P.O. Box 558
Taos, NM 87571

Reply to 2720

Date March 29, 1983

Richard C. Niemeyer
Bureau of Land Management
Taos Resource Area Manager
P.O. Box 1045
Taos, NM 87571

Dear Mr. Niemeyer:

We have reviewed your draft environmental assessment of the proposed molybdenum tailings disposal facility on Guadalupe Mountain.

We share your concerns for protection of the water quality in the Rio Grande Wild and Scenic River and support the mitigation measures you have listed on pages 32 and 33 of the assessment.

Thank you for the opportunity to comment.

Sincerely,

Jack C Crellin

JACK CRELLIN
Forest Supervisor

TAOS RESOURCE AREA
ACTG
HYDR

MAR 31 1983

FS-6200-11(8-80)

Mr. Richard Niemeyer
Area Manager, Taos Resource Area
Bureau of Land Management
Taos, NM

April 4, 1983

Robert L. McCollum
1614 Hermosa Dr., NE
Albuquerque, NM 87110

Dear Mr. Niemeyer,

Please accept these comments concerning the Hydrology portions of the Molycorp Proposed Guadalupe Mountain Tailings Site EA. The comments are not meant to be personally critical of or to lash out at the author of the Hydrology sections of the EA. They are only meant to point some deficiencies, data gaps, and other problems relating to the Hydrology sections. These problems could be very embarrassing to both the author and the BLM should any hearings grow out the EA; Molycorp would of course zero in on the same things I point out in these comments.

Most of the statements made regarding ground-water impacts are inaccurate. Many are possible, but they are inaccurate because no data exist on the geology and hydrology of the site to either prove or disprove them.

Because of the tone of some of the comments, please do not assume that I am an advocate of construction of the proposed tailings facility.

Sincerely,

R.L. McCollum

Comments on Taos Resource Area's Molycorp Proposed Guadalupe Mountain Tailings Site.

I. Chapter 1 - Proposed Action

A. Unavailable Information

D-1 1. In reference to item #2; For not knowing anything site-specific about fractures in the basalt, geologic controls on ground-water flow, relationships of springs to ground water, etc, the author certainly describes impacts in Chapter 3 in specific detail! How can the BLM do this? The first sentence under ground-water impacts of Chapter 3 even states that impacts to ground water are unknown at this time!

D-2 2. In reference to "ground water table" in item #2; The word "ground" is redundant. Is there also a "surface-water table"?

II. Chapter 2 - Affected Environment

A. Water Quality (Surface Water)

D-3 1. page 7; The word "data" is plural. Rather than "No data is available..." the sentence should read "No data are available..."

D-4 2. page 7; The statement "surface water is rare" sounds very strange. Something like "scarce","limited quantity", etc, would be better.

D-5 3. page 7; The statement "runoff occurs only during high-intensity summer rainstorms (only of short duration)" is inaccurate. I would be willing to bet that runoff also occurs during snowmelt in spring, although volumes may be smaller and durations longer. I would also bet that runoff also occurs during frontal storms of spring and early winter.

D-6 4. page 7; Can the "tailings ponds to the east" really be considered a "source of year-round surface water"? Those ponds are dry now anyway? This chapter should describe only the environment affected by implementation of the proposed action or alternatives.

D-7 5. page 7; The statement is made that "Red River water below the fish hatcherey averages 500 umhos". This is followed by "(During the period of mill shutdown the value has averaged 300 umhos)". Is the author implying that the only reason for the apparant better water quality is because the mill is shut down? If so, then the statement should be either qualified or deleted. As the author should well know, averages are affected by numerous factors including the number of samples taken, time of year sampled (summer storms would tend to elevate the average as runoff from hydrothermal soils would enter the river), stage of the river, and other factors. For these reasons the values mentioned above may be biased.

6. page 8; Table 1 has several problems:

D-8 a. Why are only trace metals shown?

D-9 b. Major cations and anions should also be shown.

D-10 c. A column showing New Mexico Water Quality Standards for the same parameters listed in the table would be helpful so the reader could compare easily.

D-11 d. How many samples were taken and when qere they taken, to obtain the averages?

D-12 Do you think that two sites (one on each river) are representative of the average water quality?

D-1 The statements made in the Draft EA were based on information supplied by Molycorp in its plan of operations. Since the DEA was released, additional information has become available which has filled in some of the data gaps pertaining to the geologic and hydrologic characteristics of Guadalupe Mountain. This information has been used in the appropriate text revisions in Geology and Water Resources section of Chapters 2 and 3 of the Final EA. The sources of information are listed in the References section of the FEA and below.

Geocon. December 1983. Report to Molycorp, Inc., Study of Potential Seepage, Proposed Guadalupe Mountain Tailings Area.

Lipman, P. W., and Mernhert, H. H. 1979. The Taos Plateau volcanic field, northern Rio Grande rift, New Mexico in Riecker, R. E., ed. Rio Grande rift: Tectonics and Magmatism: American Geophysical Union, Washington, pp. 289-311.

Lambert, W. 1966. Notes on the Late Cenozoic Geology of the Questa Area, New Mexico: New Mexico Geological Society Guidebook, Taos-Raton-Spanish Peaks Country, 17th Field Conference, pp. 43-50.

Molycorp, Inc. March 13, 1984. Letter in response to BLM questions concerning documents submitted by consultants pertaining to water seepage and groundwater flow.

D-2 Appropriate text revision has been made.

D-3 Appropriate text revision has been made.

D-4 Appropriate text revision has been made.

D-5 It is probably true that there may be substantial runoff from the steeper slopes of Guadalupe Mountain during snow melt in the spring and frontal storms during the spring and early winter. However, the proposed tailings disposal project is located in an area of nearly flat terrain containing porous and permeable surface material and it is our contention that the only significant runoff occurs during high intensity summer rainstorms.

D-6 Appropriate text revision has been made.

D-7 Data to support the 490 umhos average was collected over a period of 2(years. Data to support the 335 umhos average was collected over a period of 1 year. We are implying that the mill shutdown has had an effect. This information has been changed in the Final EA to reflect different stations and time periods.

D-8 Other parameters are shown along with the trace metals since we felt these are also affected by Moly operations.

D-9 Some of the major cations and anions have been included in Table 2 of the Final EA.

D-10 This has been done in Table 7.

D-11 Appropriate text and table revisions have been made.

D-12 Actually, there were three sample sites and we think that they are representative of the water quality within the Wild and Scenic River system.

D-13 e. It is not clear what the units of concentration are for parameters listed. All these should be explained at the bottom of the table. Why not just state "all concentrations of trace metals in micrograms per liter (ug/L)"; the phrase "or parts per billion" implies either/or (I realize that they are about the same thing). What is the concentration of pH in? (ug/L, ppb, or just units?). The abbreviations for units of concentration should also be explained at the bottom (i.e. What does umhos mean to the average reader?). Dissolved Molybdenum should also be shown.

D-14 7. page 9, Table 2; Why not show concentrations of the trace metals in ug/L, to be consistent with Table 1? The switch from ug/L to mg/L one later is very confusing to readers.

B. Water Quality (Ground Water)

D-15 1. page 10; The two springs sampled should be identified on Figure 1 so the reader can compare the locations with that of the proposed tailings pond. Which well was sampled and where is it? Is it in the middle of Kansas, or where? The reader needs to know this, wouldn't you agree? Also, what is the aquifer tapped?---Basalt, Alluvium, or both?

D-16 2. page 10; In Table 3 the statement is made that "values for Manganese and Molybdenum are 250 and 680 times greater for the seepage water". There are problems with this.

a. Is the author comparing the spring or the well, or both, to the seepage water?

D-17 b. This statement is either completely inaccurate, or the concentrations listed in Table 3 are in the wrong units! First take Managanese, assuming all values are ug/L as stated: the seepage water's concentration is 363 times greater for the spring, and 253 times greater for the well. Second take Molybdenum, with the same assumption: the value shown for the springs is, in fact, 1.5 times greater than that for the seepage water!; and there is no concentration shown for the well water. This is misleading and is a mistake on both the part of the author and the editor.

D-18 c. If all concentrations in Table 3 are indeed in micrograms per Liter (as stated), then the author's statement is totally inaccurate.

D-19 d. Perhaps the value shown for seepage is actually in milligrams per Liter, while those for the spring and well are in micrograms per Liter. If that is the case then the author should show all concentrations in either one unit or the other, to avoid confusion. A very sloppy mistake, indeed!

D-20 3. page 10; The fish hatchery location should be shown on Figure 1, for reader orientation.

4. page 10; Referring to Ground-Water inflow:

D-21 a. Rio Grande; the statement "Spring flows were measured at 2.9 CFS"-what does this figure mean, really? Is it a total for all springs? One spring? Why is inflow estimated at 40 CFS? Should the reader assume the difference of 37.1 CFS to be underflow, or what? The author fails to mention that maybe half the 40 CFS inflow comes from the west side of the river.

D-13 Appropriate text and table revisions have been made.

D-14 All tables have been made consistent with one another with the exception of Table 1 which was left as is so as not to change values from those in the appendices.

D-15 Figure 1 has been revised as appropriate. The aquifer tapped is basalt.

D-16 The comparison is of both the spring and the well to seepage water for both elements. However, the concentration values have been revised and are depicted on Table 2 of the Final EA.

D-17 These were approximations. Values were compared that gave the lowest ratio. Molybdenum was not sampled at the well. Values have been corrected in the Final EA.

D-18 These figures were in micrograms/liter and were based on actual sample data.

D-19 All values shown in Table 3 of the DEA are in micrograms/liter.

D-20 Figure 1 has been revised as appropriate.

D-21 The 2.9 cfs and 0.31 cfs were measured values from two individual springs. The 40 cfs has been revised to 46 cfs and represents estimated flow from the east side of the Rio Grande under and/or around Guadalupe Mountain.

D-22 b. Red River; the statement "spring flows were measured at 0.31 CFS". My question is basically the same as it was for the Rio Grande. Also, how much inflow comes from the south?

D-23 c. Where is the Rio Grande "site"? Where is the Red River "site"? The locations should be noted on Figure 1.

D-24 d. Large volumes of ground-water inflow from discharge areas do not necessarily imply "rapid rates of movement". The author must keep in mind that there is a very large contributing area for this discharge!

D-25 e. The "high permeability" referred to for the basalt is probably not in any way uniformly distributed throughout the rock. Instead it is no doubt a function of fracture patterns, weathered bedding surfaces, and other factors peculiar to basalt geology.

5. page 12, Figure 1; There are several problems with this map:

D-26 a. The locations of the springs and well sampled, as well as the two "sites" where discharge was measured need to be noted on the map so the reader can see at a glance where they are relative to the proposed (and existing) tailings ponds.

D-27 b. A linear map scale would be much, much better than the numerical scale now used! If I remembered right off the top of my head what 1:126,720 converts to, then there would be no problem; but unfortunately I don't remember. I doubt if anyone else does either.

c. In the explanation of map symbols:

D-28 1) rather than "projected ground-water flow", a statement like approximate direction of ground-water flow would be better.

D-29 2) are the "water-level contours" given in feet, meters, inches, miles, or what?

D-30 3) the BLM recreation area wells, along with Big and Little Arsenic Springs, should be noted.

d. In the explanation of monitoring site:

D-31 1) are all wells plotted with a hollow circle being proposed as monitor wells? If so, then someone is going to have quite a big job. Most of these are upgradient from the tailings areas anyway!

D-32 2) What is a "proposed spring"?

D-33 6. Why is water quantity discussed under the heading of "Water Quality"?

III. Chapter 3 - Environmental Consequences

A. Water Quality (Surface Water)

1. No Comments.

B. Water Quality (Ground Water)

D-34 1. page 25; Why is water quanitity being discussed under a heading of "Water Quality"?

D-35 2. page 25;The very first sentence states "Effects to ground water at this time are unknown". If so why even bother to describe these allegedly unknown effects in gorey detail for the next page? The author even mentiones that specific wells and springs will be polluted and that this will all occur within one year after tailings disposal begins. There is absolutely no hydrologic or geologic data on which such a scare-tactic statement such as this can be made!

D-22 See response D-21.

D-23 Figure 1 has been revised as appropriate.

D-24 Appropriate text revision has been made.

D-25 Appropriate text revision has been made.

D-26 Figure 1 has been revised as appropriate.

D-27 Figure 1 has been revised as appropriate.

D-28 Figure 1 has been revised as appropriate.

D-29 The unit of measure is in feet. Figure 1 has been revised as appropriate.

D-30 Figure 1 has been revised as appropriate.

D-31 The wells plotted on Figure 1 as hollow circles represent water wells and do not represent proposed monitoring wells. As these wells would not be impacted by the proposed action, they have been deleted from Figure 1 of the Final EA.

D-32 This is the spring we propose to monitor.

D-33 Appropriate text revision has been made.

D-34 Appropriate text revision has been made.

D-35 Refer to response D-1 and revisions to Chapter 3, Water Resources for the Final EA.

3. pages 25 and 26; There are many problems with the narrative about the "unknown effects" that only the major problems can be pointed out here:

D-36 a. How does the author know that the "downward seepage of water will be rapid once it passes through the tailings?" Is it being implied that the downward flow through the basalt will be like turning on a faucet and then unpluging the drain? There are absolutely no data to indicate a direct (or short circuited) connection between the upper basalt flows and the older, lower ones, which contain the regional water table 750 feet below. In fact, the fracture patterns for different basalt flows may be differnet unless there is regional fracture trend superimposed on them. But of course, this isn't mentioned in the narrative.

D-37 b. The author assumes the tailings water will reach the regional water table (more "unknown impacts"?). He states "After reaching the regional aquifer..." But there is no doubt quite a complicated maze of interconnected, disconnected, and discontinuous fractures which this water would have to negotiate on the way down to the regional aquifer, 750 feet below. Most likely the fractures are not straight vertical tubes, as implied. In fact, fractures may wedge out into solid, dense basalt rock. There may not even be a connection at all between upper and lower basalts. If perched ground-water bodies exist in the upper basalts, then an uncased bore hole from those zones to the lower, regional water table would be the only way water would drain to the lower zones.

D-38 c. The author states "...little vertical mixing and rapid movement to the river is expected". This statement is inaccurate because if movement is as rapid as implied throughout the narrative, then flow would also no doubt be turbulent. Thus, extensive vertical mixing and subsequent dilution of seepage would occur, assuming of course that the seepage got to the regional water table in the first place.

D-39 d. How in the world can the author make the statement that "this water is expected to reach the Rio Grande Wild and Scenic River within one year after tailings disposal on Guadalupe Mountain begins"??? No hydrologic and geologic data exist to prove that this is true. This statement is a scare tactic by the BLM. It is based solely on emotional environmentalism! I'm surprised that this wasn't edited out. To reach the regional aquifer the seepage would have negotiate a maze: First the water would have to infiltrate the tailings at the bottom of the pond (which may tend to seal the pond bottom anyway); Second the water would have to infiltrate any alluvial or eolian soils (clay loams) beneath the tailings (assuming any soils were left after dam construction); Finally the water would have to seep down through a complicated system of fractures and solid basalt rock to the regional water table 750 feet below. So the Public is being led to believe that all this movement, and then flow out to the Rio Grande will occur within one Year? No way! The river is 4 miles directly downgradient of the proposed tailings pond. Ground-water flow rates would have to be absolutely phenomenal for this to occur. Flow rates, once

D-36 Refer to response D-1 and revisions to Chapter 3, Water Resources for the Final EA.

D-37 Refer to response D-1 and revisions to Chapter 3, Water Resources for the Final EA.

D-38 Refer to response D-1 and revisions to Chapter 3, Water Resources for the Final EA. Turbulent flow is not likely at 10^{-3} cm/sec.

D-39 Refer to response D-1 and revisions to Chapter 3, Water Resouces for the Final EA.

D-39 cont'd the seepage water reached the regional aquifer (assuming of course that it did) would have to be much, much greater than 20,000 feet, or 4 miles, per year!

e. The author states that basalt is a highly-permeable strata. D-40 This is not necessarily true. Basalt is an igneous rock with low rock permeability. It may exhibit local areas of increased, high formational permeability because of secondary fracturing, cooling joints, etc.

f. Referring to the recreation area wells and springs along D-41 the Wild River; These wells and springs should be noted and labeled on Figure 1. Are the springs referred to along the Rio Grande or Red River?

1) D-42 According to Figure 1 the well (not labeled) at the Chiflo Campground would have little or no chance of becoming polluted since it lies on the same water-level contour as does the proposed tailings pond. (Just for the record, ground water tends to flow from regions of higher head to regions of lower head).

2) D-43 If water-level contours and flow lines on Figure 1 are correct, the springs along the Red River would also have little chance of being polluted by the proposed tailings pond. In fact, those springs lie directly downgradient from the existing ponds, and there is absolutely no information to indicate that these springs were ever impacted by the existing ponds. Why then is the author so intuitively certain that wells and springs downgradient from the proposed ponds will be impacted? After all, isn't it the same geology and ground-water flow systems? How can the "unknown effects" occur within one year? The water would have to flow farther from the proposed ponds than from the existing ponds, and no pollution has occurred from the existing ponds to springs downgradient from them. I thick this question is a very important one!

g. Referring to the four ground-water sampling sites mentioned;

1) D-44 Where are they located? They are not noted on Figure 1 as indicated in the text.

2) D-45 Is the conductance of 200 umhos an average of the four values? Do each of the four sites have a conductance of 200 umhos? This must be made clear to the reader.

h. D-46 page 27, Table 7; It would be a good idea to mention which four constituents exceed EPA's criteria. These should be flagged in the Table and mentioned in the text.

i. D-47 The phrase "in the vicinity of emerging contaminated ground water" again implies that the author knows what the impacts are going to be. I don't think this statement can be made--it is obviously to biased. And again, on page 25, the author states that ground-water impacts are unknown at this time.

j. D-48 The author and the geologist (Team Leader of this EA) need to get together, because the last sentence of geology impacts states that "The tailings however, will have a tendency to seal the bottom (of the pond), thereby reducing the possibility of seepage."

D-40 Our contention is that the basalt of this region is comparable to that of the Pasco Basin Columbian Plateau and is considered to be highly permeable.

D-41 Figure 1 has been revised as appropriate.

D-42 Ground water contours are uncertain. This well gives us information on existing water quality.

D-43 The groundwater flow pattern under the existing site may not be represented by those of the regional water table shown in Figure 1. The possibility of pearched water in the vicinity of the existing tailings makes the direction and ultimate disposition of seepage uncertain.

The time frame for impacts has been revised to 7 years in Chapter 3, Water Resources, of the Final EA.

D-44 Figure 1 has been revised as appropriate.

D-45 Based on additional information, the conductance value of 200 umhos has been revised to 220 umhos. Both values represent an average of the four sites.

D-46 The appropriate text and table revisions have been made in Chapter 3, Water Resources, in the Final EA.

D-47 The appropriate text revisions have been made in Chapter 3, Water Resources, in the Final EA. See also Response D-1.

D-48 Revisions have been made to the Glossary as appropriate.

IV. Glossary

A. Ground Water; the definition given sounds strange. It could be changed to simply "water which is contained in an aquifer." The phrase "hydrostatic pressure" is irrelevant.

B. Other terms which need to be included in the Glossary are;

1. Specific Conductance
2. Micromhos (umhos)
3. Water-Level Contour
4. What does micrograms per Liter mean in relation to milligrams per Liter? (i.e. ug/L X 1000 = mg/L).
5. Water Table
6. Aquifer
7. Ground-Water Inflow
8. Permeability
9. Vertical Mixing
10. Acre-foot of water
11. Runoff
12. There may be other terms also.

D-49

D-49 Revisions have been made to the Glossary as appropriate.

THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87131

April 1, 1983

Richard C. Niemeyer
Taos Resource Area Manager
Bureau of Land Management
United States Department of Interior
Taos, New Mexico 87571-1045

Re: 3809(018)
NM-018-P82-1

Dear Mr. Niemeyer:

The Draft Environmatal Assessment on the proposed Molybdenum ~~Tailings~~ Disposal Facility for Molycorp, Inc. is a disappointment to anyone who cares about probable "visible intrusions" upon the Rio Grande Wild and Scenic River, and health, safety and enviromental impacts upon the area in the immediate vicinity of the proposed tailings facility. It also raises some serious questions as to how the Environmental Assessment was prepared.

E-1

It is a disappointment because: 1) the document is vague, and there is clearly a need for more work and investigation of the impacts on the springs, aquatic systems, ground water, and the river system, including the potential for contaminating the chief water source for a major portion of New Mexico; Without more information, the risks, based on what little there is in the document, would appear to be high! This is unacceptable!

E-2

Further, 2) the section on mitigation is tendentious. All the Recommended Mitigation Measures are "suggestions" (p.31), and may or may not appear in the final EA as requirements. This is unfortunate, and it is highly recommended that these recommendations be made requirements for the mitigation of adverse effects. In addition, more has to be provided to ensure the protection of ground water, the springs (which are unique - there is nothing like them - and highly vulnerable), the river (including its scenic and recreational values), and all aquatic life. Certainly, the tailings facility has a high potential for heavy and trace metal contamination as a result of the possibility of rapid seepage to ground water and of controlled seepage required for dam integrity. Requirements for preventive measures are essential, and the company should be required to undertaken all essential monitoring and other actions to prevent ground water pollution. This is all the more important because of the heavily fractured and readily permeable volcanic formations close to the springs and the Rio Grande, the state's largest source of water.

In addition, more specific measures are essential for the protection of wildlife habitat, recreation, visual and cultural resources. These values are not to be glossed over because of the economic value of the project. Over the years I have often hiked down from Big and Little Arsenic springs to the river. I know how beautiful this area is, and how essential it is to ensure

E-1 A complete revision and a further analysis has been made in the sections dealing with water in the Final EA. We agree with and share your concern for the potential contamination of the chief water source for the majority of the state. Our constraints with regard to availability of data and timing of the preparation of the EA, however, are mandated by 43 CFR 3809 regulations and the 1872 Mining Act. When a plan of operations is submitted there is a set time period in which an environmental analysis is conducted and, based on information available sufficient for the authorized officer to make an informed judgement, a decision is made. Also see Introduction in revised Chapter 1 of the Final EA.

E-2 The Draft EA was released to solicit public comment on the proposed project and to request assistance in the development of mitigating measures that would ensure that the proposed project would not result in unnecessary environmental degradation.

E-2 cont'd it is protected. Preventive protection in the form of a very rigorous plan of operations is particularly important - since it appears BLM lacks the discretionary authority to reject this project..

E-3 3) It is not clear that the alternatives to the proposed project have been adequately considered. Certainly, there is no basis in fact for the reader to be able to make an assessment based on the information contained in this DEA. The final EA needs to contain more information.

E-4 Finally, there is the question of how the EA was prepared. Given the tendentious nature of this DEA, and given the recent event of EPA negotiating too closely with industry -- it seems essential to ask several questions for the record: Did negotiations with Molycorp, Inc. occur in private? If so, what concessions were made? Were instructions issued from above to weaken the findings, or to suggest rather than require the mitigative measures? Was the Draft submitted to Molycorp, Inc. representatives for revisions or changes before publication? If instructions for cooperation with industry came from above within the Department of Interior, did they come from Washington? From whom? Were representatives from the public allowed to particpate in any negotiations on the contents of the DEA or on the proposed mitigation "suggestions?"

These questions are not asked to be difficult, but it is essential to have the record clear - particularly when one could expect the Taos Resource Area Manager to maintain the high standards of the past in the preparation of this document.

I hope these comments and questions serve a helpful purpose, and will contribute to the ultimate objective of ensuring a sound FEA and a sound environmental project.

Very truly yours,

Jay B. Sorenson

Jay B. Sorenson
Professor

CC: Kay Grotbeck, Chairperson
Albuquerque Group,
Sierra Club

Russel Rhoadea, Chairperson
New Mexico Water Quality Control Commission

Governor Toney Anaya
State of New Mexico

E-3 This EA was written under the requirements outlined in 43 CFR 3809 (refer to Appendix A of the Final EA), which mandates that BLM assess the impacts resulting from the proposed action to determine if unnecessary and undue degradation of the public lands would occur. There is no provision in either the Federal Land Policy and Management Act (FLPMA) or the 43 CFR 3809 regulations to consider alternate locations. Refer also to the Alternatives section in Chapter 1 has been revised.

E-4 The nature of the BLM contact with Molycorp has been, in all instances in the past and will continue to be in the future, totally objective and open. There have been no private negotiations with the company to make any concessions. There were no instructions received from any BLM or other office to weaken findings With regard to mitigation measures, the process is to develop mitigation through the environmental process into stipulations which will be attached to the permit if approval is granted. The Draft was not submitted to the company except as a courtesy at the public review period. During the development of the draft however, a preliminary draft was reviewed by company representatives in the BLM Taos office to ensure that those portions of the document that paraphrased or otherwise interfaced with the plan of operations were in fact consistent with the submitted plan. The public was encouraged to assist in the development of mitigation by participating in the review process.

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April 5, 1983

Mr. Richard Niemeyer
Taos Area Manager
Bureau of Land Management
P.O. Box 1045
TAos, New Mexico 87571

Re: Draft Environmental Assessment: Proposed Molybdenum
Tailings Disposal Facility for Molycorp, Inc., February 1983

Dear Mr. Niemeyer:

As you know I represent New Mexico Citizens for Clean Air and Water, the Sierra Club and the Concerned Citizens Committee of Questa in connection with the Guadalupe Mountain Tailings Disposal Area proposed by Molycorp, Inc. NMCCA&W is a New Mexico non-profit corporation with a membership of over 2,200 citizens of the state of New Mexico dedicated to the protection of its air and water resources. The Sierra Club is also a non-profit corporation with a membership nationally of over 300,000 and of over 2,000 in its Rio Grande Chapter. The Concerned Citizens Committee of Questa is composed of dozens of Questa residents who are deeply concerned about Molycorp's degradation of their environment, particularly from dust blown tailings and the potential for large scale pollution from Molycorp's proposed Guadalupe Mountain tailings site.

We have carefully reviewed the draft environmental assessment dated February 19, 1983 prepared by your office in connection with Molycorp's proposed tailings disposal facility near Questa. We have previously studied the Plan of Operations for the Guadalupe Mountain tailings area, attended the "open house" sponsored by Molycorp and your office on this project and have discussed it in great detail with both officials of Molycorp and your office. We still remain greatly alarmed at the magnitude of the proposed project and the enormous risk it poses to the environment of Questa, especially the potential degradation of the Wild and Scenic segments of the Rio Grande and the Red River. The purpose of this letter is to provide you with our comments on the EA and to once again insist that a full-scale EIS be prepared on this project.

Page 2
April 5, 1983
Mr. Richard Niemeyer

F-1 By previous correspondence we have advised you that we believe NEPA compels BLM to prepare a fullscale EIS on the Guadalupe Mountain tailings facility. The staggering size of this facility---1,200 acres of federal land containing up to 200 million tons of tailings with dams up to 400 feet high---commands this conclusion. And the present EA only reaffirms our determination; it shows that the environmental consequences, especially water quality effects, need to be more fully studied and explored. By BLM's own admission there is insufficient information to adequately evaluate the impact of this project on air and water quality. The EA, more than any other review or research to date, indicates that BLM must conduct a detailed analysis of the environmental consequences of this facility. Because of the lack of information and data, the EA is deficient; it cannot be substituted for the wholescale analysis mandated by NEPA in an EIS.

F-2 Specifically, the analysis of water quality effects is incomplete and superficial. The EA reports (p. 5) that quantitative data is unavailable to analyze the ground water characteristics of the project, including the extent of fracturing in the basalt, the relationship of springs to the ground water table, and the transmissivity of water through the basalt. The EA concludes bluntly: "Effects to ground water at this time are unknown." (p. 25) BLM maintains, however, that the EID ground water permitting process required by New Mexico law may be relied upon to avoid doing a particularized analysis of these water quality impacts for which data is presently unavailable.

F-3 BLM's position is contrary to law. BLM may not defer to the EID permitting process---especially since it has not even been commenced---in making determinations under NEPA. An agency cannot be excused from evaluating a major environmental impact (in this case the ground water under and near the proposed facility) on the grounds that the impact will be examined by another agency. BLM must generate the necessary data and perform the required analysis itself---now. NEPA does not permit a deferment of the evaluation of environmental impacts until a later time when the information becomes available. The environmental analysis must precede the action.

F-4 Molycorp has made a startling finding regarding its facility: the expected seepage loss from the site will be 3,600 acre feet per yer (almost 5 cubic feet per second). The water from this seepage is expected to reach the Wild and Scenic

F-1 The primary purpose of this Environmental Assessment (EA) is to determine if an Environmental Impact Statement (EIS) is necessary, this determination based on an analysis of the impacts, not soley on the size of the project. The decision document will determine if an EIS is necessary. A secondary purpose of this EA is to determine the adequncy of the mitigation and reclamation measures included in the plan of operations in determining if it would result in unnecessary and undue degradation of the public lands and to develop mitigation measures to prevent this degradation. This determination is the basis for approval or rejection of the plan of operations.

Because of the anticipated adverse impacts to water quality, Molycorp must obtain a groundwater discharge permit from the New Mexico Environmental Improvement Division (EID) and no discharge of tailings will be allowed on the Guadalupe Mountain site until the permit is obtained. In order to obtain the permit, Molycorp must demonstrate to EID's satisfaction that there will be no significant degradation of groundwater quality. Molycorp, in cooperation with EID, is completing additional groundwater studies in order to obtain this permit. If Molycorp can demonstrate that this project will not result in a violation of state surface and groundwater standards and obtains its permit, it would be difficult to identify significant impacts as defined in 40 CFR 1508.27 because there are no applicable federal standards to apply.

Please note that we are implementing the 43 CFR 3809 regulations for a proposal that is authorized by the General Mining Law of 1872, and the determining factor for approval, as well as requiring mitigating measures, is in answering the question: "Will the proposed action result in "unnecessary and undue degradation of the public lands"?

Additional Air and Water Quality information has become available since issuance of the Draft EA. See responses to D-1, O-16, and O-29.

See Chapter 3, Water Resources and Mitigation Measures, of the Final EA.

F-2 Further analysis was conducted based on data available from a consultant and a set of assumptions that were made. Chapter 3, Water Resources, of the Final EA contains more detail on the effects to groundwater, but uncertainty still exists which will require additional research to resolve. The applicant has proposed to conduct such studies as parts of its State groundwater discharge plan.

See response D-1 for details on additional information available.

F-3 We have never considered the BLM's position as one of deferral of our responsibilities, but rather one of cooperation and compliance with other federal and state agencies and their regulations.

F-4 The estimate of time of travel from the pond to river has been revised. We now estimate the movement to occur in the range of .7 to 70 years with the median being 7 years.

F-4 contd section of the Rio Grande within one year ater tailings disposal begins. These critical findings alone should persuade BLM that a more comprehensive study is necessary to fully evaluate the impact of this facility on the environment. The EA does not, by its own admission, contain a specific, detailed analysis of the impact of seeping tailings waters on ground water. This is the most far reaching and potentially devastating impact of the entire project and BLM fails to evaluate it. This ommission is fatal. The EA does not comply with the most basic requirements of NEPA.

F-5 At a minimum a detailed EIS should be undertaken to include the following:

1. A hydrological survey of the site and all impacted areas to determine the migration of ground water, its direction of flow, how fast it migrates, the degree of dilution (if any) and its composition when it reaches the springs along the Rio Grande and Red River.

2. Extensive pump testing in existing wells around the site (drilling additional ones if required) to determine the permeability of the basalt.

3. Tracer experiments (injecting wells near facility) to determine movement of contaminants in ground water and their potential concentrations at springs along the Rio Grande and Red River.

4. Identification of which springs are going to be impacted by seepage from the facility.

5. Study of the ecological community of these springs to determine the effects on aquatice organisms, wildlife, etc., including a surgey by a wildlife biologist, literature review and toxicity tests. For example, Arsenic Springs are probably a principal spawning habitat for trout of the Rio Grande. Yet the EA fails to even address the potential impact of seeping tailings on this habitat. The EA admits (p. 5) that there is no data to determine the effects on aquatic organisms due to possible changes in water quality via ground water introduction to the springs. These effects can have a drastic effect on the fish population of the Red River and Rio Grande. This unavailability of data again mandates further study and exploration in an EIS.

F-5 Additional studies have been carried out since the DEA was released. A study by EID and the applicant's consultants has been completed to identify species present in the Springs (see Table 3 of the Final EA).

As part of Molycorp's state groundwater discharge plan, both a toxicity study of tailings effluent and a geohydrologic study of the Guadalupe Mountain area have been completed. The toxicity study used Daphnia and showed no acute toxic effects over a 48 hour period. This would seem to indicate that impacts would be similar for organisms in the spring systems and that toxic effects would probably not occur. (See also Wildlife Section of Chapter 3 of the Final EA). The geohydrologic study consisted of: (1) an evaluation of existing hydrologic, geologic, and hydrochemical data for the Guadalupe Mountain Area (Red River to Sunshine Valley) and (2) field studies of the area and involved the collection of water samples from selected sites and measurements of spring discharges. Based on an evaluation of existing data and new data collected, Molycorp's consultant concluded that the proposed project would not exceed state water quality standards. However, certain questions have been raised concerning the geohydrologic study and it is possible that additional groundwater studies may be required before the groundwater discharge permit is approved.

No tracer experiments are proposed due to the anticipated time of travel from the site to the springs.

F6

Finally, the impact of fugitive dust emissions from the proposed facility on local air quality is wholly inadequate. The EA concludes that "resolution of this impact will require additional data and analysis." (p. 25) Again, this lack of data and analysis only confirms our contention that a full EIS must be prepared. BLM cannot justify its failure to study environmental effects on the grounds that data does not exist to perform such a study. Such a position is legally untenable and makes a travesty of the NEPA process. Obviously, the data must be obtained and the analysis performed.

The monitoring now being done by New Mexico EID only measures ambient concentrations one day out of six. The fugitive dust problem is at its worst, however, during the spring months. In order to obtain meaningful data, monitoring should be done every day during this period.

In conclusion, we submit that the deficiencies of the EA show that the Guadalupe Mountain tailings facility needs to be studied more carefully and thoroughly. Such expanded research can only be accomplished in an EIS. We urge BLM to re-examine its previous determination not to prepare an EIS. The need and requirement for an EIS pursuant to NEPA is patently evident. We intend to obtain full and exact compliance with NEPA on this project by appropriate court action if necessary.

Sincerely,

Grove T. Burnett
Attorney at Law

GTB/LMV

cc: Honorable Jeff Bingaman
Honorable Bill Richardson
Honorable Toney Anaya
Ms. Maxine Goad

F-6 BLM believes that EID's monitoring of the existing tailings pond has been, and will be, adequate.

For the 15 years that the tailings pond was in operation, there has been no documented evidence of health hazards in Questa due to the dust.

STATE OF NEW MEXICO
DEPARTMENT OF
FINANCE AND ADMINISTRATION
STATE PLANNING DIVISION

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JOE GUILLEN
ACTING DIRECTOR

DENISE D. FORT
SECRETARY

8 APR 1983

April 8, 1983

L. Paul Applegate
District Manager
Bureau of Land Management
Albuquerque District
P.O. Box 6770
Albuquerque, New Mexico 87107

Dear Mr. Applegate:

It has come to my attention that the Bureau of Land Management's Albuquerque District has issued a draft environmental assessment, Proposed Molybdenum Tailings Disposal Facility for Molycorp, Inc., with a comment deadline period ending April 11, 1983.

G-1 Office of Management and Budget Circular A-95 requires that all draft environmental impact statements be submitted to the State Clearinghouse for a forty-five (45) day comment period. That submission has not yet been made for this project. Compliance will be necessary in order to get the state signoff and to be able to proceed with the project.

My staff has spoken to Mary Zuschlag in your office in order to obtain copies for the State Clearinghouse. It will not be feasible for the Clearinghouse to comply with the April 11, 1983 deadline. If the comments are submitted by April 8, 1983, the earliest the state can submit comments will be May 13, 1983. We request that your comment period will need to be extended at least until that date for you to receive our official signoff on the project.

Thank you for your attention in this matter. If you have questions, please feel free to contact me, or David Martinez of my staff at 827-4950.

Sincerely,

Joe Guillen
Acting Director

G-1 BLM sent a copy of the Draft EA to the New Mexico State Planning Division on April 19, 1983. Failure to send a copy earlier was an oversight on our part, for which we apologize.

R.H. Hogrefe Engineering Inc.
POST OFFICE BOX 868 / TIJERAS, NEW MEXICO 87059 / 281XXX9 3552

April 7.1983

Bureau of Land Management
Taos Resource Area Office
Taos, New Mexico 87571

Re: Comments for the " Draft Environmental Assessment-
Proposed Molybdenum Tailings Disposal Facility for
Molycorp Inc. Feb. 1983 "

Dear Sirs:

The following comments pertain to the above referenced report.

I obtained this document from the Albuquerque B.L.M. office.

I believe the aspect of the tailings disposal site construction presents serious questions deserving a greater in-depth consideration than that allowed by an assessment report. I support the preparation of a more complete analysis in an environmental impact statement for the following reasons: H-1

(1) A complete lack of addressing the effect of increased mining with subsequent increased tailings production on the existing tailings pipelines paralleling the Red River en route to both the present and proposed tailings disposal sites. It is reasonable to expect significantly increased stresses on the pipeline transport system as but one result of the proposed Guadalupe Mtn. disposal site. For example, what pipeline management measures are proposed to counter increased tailings production and attendant stresses on the entire system? The overall impacts along the Red River should be considered as integral with the Guadalupe Mtn. site development. This is especially important in view of the extended mine life anticipated. H-2

H-1 See response F-1.

H-2 Although mine production will increase, it is expected to be minimal. This increased production is not expected to result in significantly increased stresses on the pipeline transport system. In addition, both the mine and existing pipeline system are located on U.S. Forest Service and/or private land, which are outside of BLM jurisdiction. Consequently, a discussion of impacts to the existing pipeline system is beyond the scope of this EA.

(2)

H-3 The basic statement that the assessment report offers regarding groundwater impact leaves much to the imagination. As stated in chapter 3, pg. 25, " Effects to groundwater at this time are unknown. " Should this conclusion be sufficient basis to proceed with any project ? More definitive data can be developed.

(3)

H-4 Information is offered in the assessment report stating expected high permeability basaltic formations to allow rapid transport of seepage. The seepage is expected to effect sources of consumptive use , namely springs used by hikers etc., wildlife and actual in-stream flows. The seepage , as the report states, could reach the consumptive use areas in a year or less due to underground fractures. The degree of filtering and/or dilution is stated as " critical to maintain acceptable groundwater quality" (pg. 26, chapter 3), but again no data is apparently available to support the desirable filtering/dilution actions will occur. More definitive data should either be presented or investigated to ensure this concept is valid.

(4)

H-5 A very wide divergency exists between the numerical water quality standards in Table 7. Why are the Federal E.P.A. criteria many orders of magnitude more stringent than the New Mexico standards ?

(5)

H-6 The suggested mitigation measure offered in the report to "seal the internal dam faces to prevent seepage" is well taken. Does

H-3 See Response D-1.

H-4 Refer to response F-4. Dilution has been revised and is now estimated to be by a factor of 6.4. Refer also to the revised text in Chapter 3, Water Resources, of the Final EA.

H-5 This divergence is due to the purpose of the two standards. The State standards are to protect human health, while the EPA criteria are for aquatic organisms.

H-6 This mitigation measure (No. 1 of the Draft EA) only refers to the internal dam faces. However, a new mitigation measure has been included in the Final EA that requires the operator to construct and operate the tailings impoundment area in such a manner that seepage will be minimized. The method is left up to the operator and does not necessarily imply that the impoundment area be lined or sealed. However, sealing of the entire area may be required by EID as a condition of approval for the groundwater discharge permit.

H-6, contd. this suggestion include the entire disposal bottom area also i.e. between the dams as well ? Assuming it does include sealing all the bottom areas, should not a study prove the viability and cost effectiveness for Molycorp to undertake the bottom sealing operation as integral in their " plan of operation" prepared for the B.L.M. ? An effective sealing procedure should be arrived at based on thorough soils tests and sealing techniques to guarantee as complete as possible an effective seal. Data is needed to identify how this can be accomplished. With data specifying tested and proven means of sealing, Molycorp would be able to assess and concurr with the acceptable techniques. Would it be wise to proceed without this data assuming mutual agreement will be reached as to the most effective sealing methods with associated costs after the site has been accepted for development ?

(6)

H-7 The Parameters and Significance Levels for groundwater quality monitoring should be specified now and presented in the report.

(7)

H-8 No specific actions are recommended in the event that groundwater downgradient of the site are found to exceed the significance levels. A definite plan of action should be presented for consideration that would minimize delay for emergency actions.

H-7 The parameters and significance levels must be determined after results of the aquatic study of the springs has been completed and then primarily by EID in consultation with other agencies.

H-8 Molycorp has indicated it does not want to be bound by any specific plan of action because of improvement in state of the art technology. BLM has agreed with this position.

In summary, notwithstanding the visual intrusion, wildlife dislocation, habitat destruction, noise disturbances and other associated impacts, it would seem that the proximity of the Guadalupe Mtn. disposal site to the Rio Grande and Red River coupled with expectations of groundwater seepage contamination potential would justify a more complete statement and analysis from the B.L.M. A report is needed that specifies techniques and plans defined to avert negative impacts which include the pipelines and the disposal site.

We hope that the B.L.M. and other agencies involved are aware and concerned enough to demand definition of positive protective measures before permitting this disposal site. We appreciate the opportunity to presents our comments and request that we be informed as to future decisions regarding this issue.

Respectfully,

Robert H. Hogrefe

Robert H. Hogrefe

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Field Supervisor
Ecological Services, USFWS
Post Office Box 4487
Albuquerque, New Mexico 87196

April 8, 1983

Memorandum

To: Area Manager, Taos Resource Area, Bureau of Land Management, Taos, New Mexico

From: Acting Field Supervisor, FWS, Ecological Services, Albuquerque, New Mexico

Subject: Review and comment on Draft Environmental Assessment for Molycorp Tailings Proposal

This is in response to your letter dated March 1, 1983, requesting our review and comments on the subject document. I have reviewed the document and find that it is inadequate in describing the existing fish, wildlife and habitat resources, the potential impacts on those resources and lacks sufficient mitigation and compensation recommendations for resource losses. The Guadalupe Mountain area contains valuable fish, wildlife, and habitat resources, many of which are recognized by the Service to be species of high Federal interest. The document only gives a cursory description of their current status and the potential for losses due to this project's impacts. Therefore, we recommend the following:

1. The Bureau should prepare an Environmental Impact Statement (EIS) for the project that includes the following;

J-1a

a. Development of quantitative descriptions of fish and wildlife habitats present in the project area, and determine future changes resultant from the various proposed alternatives. The results of these analyses should be used in the selection of a preferred alternative and the development of adequate mitigation and compensation requirements.

The Service has developed its Habitat Evaluation Procedure (HEP) methodology specifically for project impact analyses such as this. Assistance in the application of HEP is available to the Bureau upon request.

J-1b

b. Conduct of seepage and ground water flow surveys, prior to completion of the EIS, to determine if the Guadalupe Mountain site would contaminate the Red River, Rio Grande, or Arsenic Springs. If the results of these surveys indicate that any of these areas would be contaminated, an alternative site should be recommended in the EIS.

J-1a Since the release of the Draft EA additional data on fish and wildlife resources have been gathered and included in the Final EA. This document is very extensive with regards to aquatic habitats and water quality. Additional avian and habitat data continue to be gathered and will be used in the preparation of the wildlife habitat management plan for the area and in the development of a reclamation plan for the site. Refer to the Alternative Section in Chapter 1 of the Final EA. Refer also to the Wildlife Sections in Chapters 2 and 3 of the Final EA and Mitigation Measures in Chapter 3 of the Final EA. Refer to response J-2.

J-1b Refer to response D-1 and Alternatives Section in Chapter 1 of the Final EA.

J-1c

c. The EIS should address the project's water requirements, and its sources, necessary to process the ore from the new underground operation and to transport waste materials to the disposal site. If additional water is to be diverted from the Red River for construction, operation or maintenance purposes, the impacts on instream flow and associated fishery resources should be addressed and a mitigation plan developed.

J-1d

d. The EIS should address the cumulative impacts on fish and wildlife resources resultant from the operation, maintenance, construction, and abandonment of the Guadalupe Mountain site, the existing tailings facilities, the new underground mining operation and the old open-pit operation. The proposed new segments of the mine, including waste disposal, and the changes in the open-pit operation represent a total change in the operation of the facility and its potential impacts on the environment. The Bureau should include adequate mitigation requirements in their analysis of cumulative impacts.

J-2

2. The Bureau should consult with the Service under the Authority of the Fish and Wildlife Coordination (48 Stat. 401, as amended, 16 U.S.C. 661 et. seq.) to determine if this project would warrant preparation of a Fish and Wildlife Coordination Act Report under Section 2(b) of the act.

Thank you for the opportunity to comment on this document. If you have any questions, please call Charles Ault of my staff at (505) 766-3966 or FTS 474-3966.

John C. Peterson

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
District Engineer, Corps of Engineers, U.S. Army, Albuquerque, New Mexico
Regional Forester, Forest Service, Albuquerque, New Mexico
Regional Administrator, Environmental Protection Agency, Dallas, Texas
Director, New Mexico Health and Environment Department, Environmental Improvement Division, Santa Fe, New Mexico
Regional Director, FWS, Office of Environment, Albuquerque, New Mexico

J-1c The BLM has concluded negotiations with Molycorp and the State Engineer to establish minimum flows on the Red River below the fish hatchery to protect the Wild and Scenic River system. The proposed plan of operations will not affect this agreement.

J-1d Although a broad spectrum of impacts are evaluated, discussion of cummulative impacts must be limited in scope to the proposed action.

J-2 Coordination with the USFWS will be accomplished as required under the Fish and Wildlife Coordination Act. The service will be involved in preparation and review of the long-term habitat management plan.

NEW MEXICO NATURAL HISTORY INSTITUTE
A Nonprofit Corporation
St. John's College Campus
Santa Fe, New Mexico 87501

9 April 1983

Richard C. Niemeyer,
Taos Resource Area Manager
Bureau of Land Management
P.O. Box 1045
Taos, New Mexico 87571

Dear Mr. Niemeyer:

We comment on the Draft EA, Proposed Molybdenum Tailings Disposal Facility for Molycorp.

Molycorp's 1982 plan of operations appears rational, clear, and appropriately cognizant of legal, moral, and economic constraints on the proposed development.

K-1 On the other hand, although the 1872 mining act is indeed the law of the land, a Congress of equal authority to that of 1872 decreed a reach of the Rio Grande to be Wild, Scenic, and protectable (PL 90-542 Sect. 10a). FLPMA also limits the previous "right" of mine operators to pollute. Therefore the Environmental Assessment's statement (p. 4) that granting of the requested permit is non-discretionary seems wrong. Molycorp's bad record with spills into the Red River gives additional basis for caution.

Our sympathies and sentiments are on the side of protecting Guadalupe Mountain from the proposed dumping: the area is scenic, is important for wildlife of the area, has recreation potential in itself, and most importantly, is part of the Rio Grande ecosystem, all of which should be protected. But regarding the mountain itself, we conclude that Molycorp is within its rights. The protections needed for the Wild and Scenic River ecosystem were not in place when needed.

K-2 Regarding the probability of water pollution of the rivers, we think that neither the Plan of Operations nor the Environmental Assessment is at all reassuring. Overseeing safety from surface spillage is, apparently, the responsibility of the State Engineer, and perhaps at this time no more thorough-going assurances can be required of Molycorp. Ground-water pollution, however, is the long-term problem, and--because of direct threat to a Wild and Scenic River and associated recreation activities as well as to the Red River hatchery--the problem with the soundest legal remedy available. Neither Molycorp nor the Bureau gives assurance that ground-water can be protected, nor that tailings seepage might not be disastrous for the resources involved. On the data given, the likelihood of serious pollution seems high.

In view of this lack of data we think that the Bureau _must_ refuse (under PL 90-542 and 43 CFR 3809) the construction permit, until sound hydrologic studies show that there is no significant threat.

Sincerely,

Roger S. Peterson

Roger S. Peterson

K-1 As the BLM interprets the U.S. Mining Laws, a mining operator has a statutory right, granted by the U.S. Congress, to enter public lands for the purpose of extracting and/or processing mineral commodities without undue hinderance from the Federal government. The BLM has the responsibility of ensuring that unnecessary and undue degradation of the public lands resulting from mining/milling operations does not occur. If an environmental assessment of the impacts resulting from a mining/milling activity described in a plan of operations shows that unnecessary and undue degradation of the public lands will not occur, BLM must approve the plan. See also Introduction, Chapter 1 of the Final EA.

K-2 The State EID has a responsibility to protect both surface and groundwater. This project must meet both surface and groundwater standards. Tailings surface water discharge is already controlled by an NPDES permit and no significant impacts are anticipated if the proposed plan is approved. A groundwater discharge permit must be obtained prior to final approval of the plan of operations. Refer to response A-1.

Gary and Donna Storch
Post Office Box 2691
Taos, New Mexico 87571

Mr. Richard Niemeyer
Bureau of Land Management
Cruz Alta Road
Taos, New Mexico 87571

April 7, 1983

Dear Mr. Niemeyer;

We have reviewed the Draft Environmental Assessment for the proposed Molybdenum Tailings Disposal Facility at Gaudalupe mountain. We have several points of concern with this document. A discussion of each follows:

L-1 1. It does not appear that a full range of feasible alternatives was considered. A straw alternative was thrown in but we would like to see a more thorough range of feasible alternatives presented for consideration. It appears that a justification of Molycorp"s preferred alternative is being attempted.

L-2 2. Although the General Mining Law of 1872 does give individual special interests unfair control over Federal lands without regards to the right of enjoyment by the general public, it does provide for denial of actions based on unavoidableadverse impacts to endangered animal species. Several endangered species do occur in the project vicinity and a lack of pertinent information has been documented through consultation with the U.S. Fish and Wildlife Service. We are very concerned about the effects of this project, specifically on the Peregrine Falcon. There is nothing in the Assessment to address the concerns of displacement, attraction of undesirable (hot) prey species and effects of tailings on localized food sources. Although a plan for protection of endangered species will be developed, it is not a part of this document and available for review at this time. Given the weaknesses in this document and Molycorp's past demonstration of environmental awareness, this is inadequate.

L-3 3. A mention is made of "investigating the possibilities of offsetting negative impacts" to wildlife through a habitat management plan. This does not constitute mitigation when over 1300 acres of existing wildlife habitat will be eliminated.

L-4 4. The effects of seepage and contamination of groundwater and eventually the Rio Grande is a concern. The degradation of water quality in the Rio Grande appears imminent, although the degree of degradation is unknown. The effects of degradation on fisheries or the food chain is not analyzed at all. The past history of Molycorp's compliance with environmental statutes seems to negate the weak mitigation measures dealing with this concern. The recommendation of Molycorp's responsibility for monitoring water quality and implementing (unknown) mitigation upon downgradient of the water quality is unaccepatable. A more extensive analysis on the effects of tailing seepage needs to be presented along

L-1 See revised Chapter 1-Alternatives Section.

L-2 The Formal Consultation under Section 7 of the Act with FWS has been completed and a non-jeopardy determination rendered.

L-3 See Required Mitigation, Chapter 3, response J-2, and Recommended Mitigation measure #7.

L-4 The time frame mandated by 43 CFR 3809 precluded the gathering of data upon which to base an analysis of this type. However, we have done some sampling of the springa and EID is conducting an analysis of the samples taken.

L-4 cont'd with stringent mitigation measures. The Wild and Scenic River Act states that "they (Rio Grande) and their immediate environments shall be protected for the benefit and enjoyment of present and future generations".

L-5 5 The mitigation measures in the document are extremely weak and appear to be more of a paper effort than a serious attempt at mitigating the major environmental impacts which will result from the proposed project. The Mining Law of 1872 does allow for stringent and extensive mitigation requirements and every effort should be made to develop a comprehensive mitigation plan.

L-6 6. Both the known serious environmental impacts and the acknowledged lack of information or available data on other impacts indicates the necessity for the preparation of an Environmental Impact Statement on the proposed project.

7. There is an overall question of the validity of the need for the proposed project. Other molybdenum mines in the nation are closed and Molycorp is stockpiling molybdenum. An opening in the molybdenum market necessitating future expansion is questionable.

Thank you for your consideration and concerns.

Respectfully,

Donna Storch
Donna Storch

Gary Storch
Gary Storch

L-5 See Required Mitigation Measures, Chapter 3 of the Final EA and response J-2.

L-6 See response F-1.

GOVERNOR
TONEY ANAYA
DIRECTOR AND SECRETARY
TO THE COMMISSION
HAROLD F. OLSON

State of New Mexico

DEPARTMENT OF GAME AND FISH

STATE CAPITOL
SANTA FE
87503

STATE GAME COMMISSION
EDWARD MUNOZ CHAIRMAN
GALLUP
J.W. JONES
ALBUQUERQUE
BILL LITTRELL
CIMARRON
JAMES H. KOCH
SANTA FE

April 12, 1983

Mr. Richard C. Niemeyer
Taos Resources Area Manager
Bureau of Land Management
P. O. Box 1045
Taos, New Mexico 87571-1045

Dear Mr. Niemeyer:

I have completed my review of the draft environmental assessment entitled, "Proposed Molybdenum Tailings Disposal Facility for Molycorp, Inc.", dated February 1983. My comments are detailed below.

M-1 At the outset, I believe that an environmental assessment (EA) is inadequate to address an issue of the magnitude of the proposed project. Instead, I feel that an environmental impact statement (EIS) is needed, and I am hereby requesting that you supercede the present EA with an EIS. I feel that the wildlife impacts alone call for the latter treatment, and this is even more the case when one considers impacts of a broader nature--including on air and water quality livestock grazing, recreation, renewable resources other than wildlife, and human environment.

M-2 Secondly, I question whether the use of public land for the proposed project is actually authorizable under the General Mining Law of 1872, and I would like to see your rationale spelled out for stating that it is. I do not claim to be conversant with the many ramifications of that law, but comments that I have received from knowledgeable sources suggest that some doubt exists about its applicability in cases of this sort. This would seem especially the case where disposal of mining wastes on public land is not the essential alternative, given the existence of the Cerro site.

Should the General Mining Law not be applicable to using public land for this proposed project, then it would seem that a special use permit would be the alternative approach. Under a special use permit, the matter of habitat loss from the project could be considered for treatment under the Fish and Wildlife Coordination Act. As you are no doubt aware, that Act provides for the replacement, mitigation, and compensation of wildlife habitat loss due to water projects. I believe a case could be made that the proposed action on Guadalupe Mountain is indeed a water project. The potential loss of wildlife habitat from the proposed project on Guadalupe Mountain is of considerable concern to me. This is particularly the

M-1 Refer to response F-1. Also refer to our letter of March 9, 1984, written in response to your letter of February 28, 1984.

M-2 Section 15 of the General Mining Law of 1872 authorizes the appropriation of non-mineral public land not contiguous to a vein or lode for the purposes of mining or milling purposes. As defined in the American Law of Mining, Volume 1, Titles I-V, Article 5.34 (The Rocky Mountain Mineral Law Foundation, 1980), mining and milling purposes include such uses as: tailings disposal, ore storage, water collection to operate a mill or a mine, construction of a railroad switch, blacksmith shop and a tool house. See also response E-3.

M-3 case in view of the rather poor documentation of wildlife use at the site, the extent of the area to be used for the project, and its long-term loss to wildlife. The treatment of the vegetation in the draft EA is simply too minimal to compute its value to wildlife, and it seems clear that biological inventories need to be done to judge the impacts of the proposed project.

I am willing to have my staff serve in an advisory capacity in such inventories, beginning this spring. I would also be interested in seeing that a Habitat Evaluation Procedure (H.E.P.) be initiated on the site under the direction of the Division of Ecological Services, should the project fall under the authority of the Fish and Wildlife Coordination Act.

M-4 As presently outlined, the project would be done with little or no replacement, mitigation, or compensation for lost or altered wildlife habitat. The proposed reclamation of disturbed areas is not treated in any detail that would allow me to evaluate its value in reversing loss or alteration of such habitat, and this is a significant inadequacy of the EA.

Other inadequacies or points of contention in the EA are as follows:

1. Page 2, item i.

M-5 Molycorp is called upon to protect endangered species, in conjunction with the BLM. Any plan or action for such protection should be developed in conjunction with our Department and with the Fish and Wildlife Service. In addition, a plan to protect other kinds of wildlife should also be developed with our Department playing the pivotal role in terms of resident wildlife.

2. Page 2, item 6.

M-6 I would prefer to see not only the tailings ponds fenced, but also open conveyance channels and related systems as well.

3. Pages 3-4.

M-7 The Cerro site is dismissed in far too perfunctory a manner, and I feel that it should be more fully discussed and given more serious treatment as a viable alternative. In my view, the only real environmental argument against it is possible contamination of groundwater. However, a lined facility should not contaminate groundwater, and westerly flows in the aquifer should take contamination away from (instead of toward) existing wells. In addition, contamination of groundwater at the present facility appears not to be regarded as severe, so why not at the Cerro site?

4. Pages 4-5.

M-8 Under State agencies that are to be consulted for authorizing actions, list the Department of Game and Fish. Our jurisdiction extends both to wildlife and habitat matters.

M-3 Refer to Wildlife section in Chapter 2 of the Final EA and required Mitigation Measues in Chapter 3 of the Final EA. Refer also to response J-2.

M-4 Refer to Recommended Mitigation Measures in Chapter 3 of the Final EA. See also responses J-2.

M-5 See responses J-2, O-26 and O-36.

M-6 Appropriate text revision has been made.

M-7 Refer to response E-3 and M-2.

M-8 See Authorizing Actions, Regulatory Laws and Authorities, Chapter 1 of the Final EA.

5. Page 5, Items 3 and 4.

M-9 It would seem appropriate that unavailable information on aquatic organisms and threatened/endangered species would need to be sought, analyzed, and discussed before this project can be approved on public lands. In regard to consultation on endangered species, it should be pointed out that the BLM is also subject to consultation with this Department as part of our formal agreements with your agency.

6. Page 14.

M-10 Under this section on threatened or endangered plants, some note as to the source of the information that none occurs should be given. Does this statement mean that none was found, or has any been sought on the site? Other than threatened or endangered plants, are any Notice of Review, Sensitive, or other special category plants known in the area?

7. Page 16.

M-11 What does "indirectly impacted" mean when referring to the 7,000 to 8,000 acres of wildlife habitat around the proposed Guadalupe Mountain project? This needs to be spelled out in some detail, especially if the habitats will be degraded or otherwise altered.

8. Page 16.

M-12 What are the 248 wildlife species known or thought to occur in the project area? These should be included in an appendix. In addition, I believe this is an underestimate of the species diversity of the area, as that many birds alone would be expected in the general region.

9. Pages 16-18.

M-13 Several species of vertebrate animals from the recent Notice of Review (Federal Register, Vol. 47, No. 251, Page 58454-58460, December 30, 1982) need to be treated here. These are potentially listable as Federal endangered or threatened species, i.e. Rio Grande shiner, white-faced ibis, Swainson's hawk, ferruginous hawk, mountain plover, long-billed curlew, western yellow-billed cuckoo, southern spotted owl, spotted bat, and swift fox. Incidentally, I find the recent (February 18, 1983) Section 7 opinion on endangered species from Ecological Services to be inadequate in terms of a satisfactory treatment of the peregrine falcon in the project area, and I am developing my own response to you on the matter.

10. Page 18.

M-14 Treatments of Harvest Species, Special Interest Species, and Ecosystem Maintenance Species are perfunctory and should be expanded, including in addressing the importance of Guadalupe Mountain to them.

M-9 See response E-1 and F-5. BLM will enter into formal T&E Species consultation with the State of New Mexico if requested.

M-10 A Threatened and Endangered Plant Inventory has been conducted. No rare or endemic Federal or State listed plants were located on the site.

M-11 Directly impacted refers to the proposed tailings impoundment area and would include impacts such as blading, blasting, removal of existing surface and spoilings areas filled with tailings material. The indirectly impacted areas include habitat disturbed or affected by the adjacent activities such as noise, vibration, dust and displacemnt of animals. Refer to Habitat Directly Affected and Habitat Indirectly Affected, Wildlife section in Chapter 2 of the Final EA.

M-12 See Appendix D of the Final EA.

M-13 These species have since been considered. Formal consultation was not considered to be necessary.

M-14 Appropriate text revision has been made.

11. Page 28.

M-15 Under vegetation, the implication is of a rather massive assault on harvestable plants early in the life of the project. Rather than doing this, I would recommend that any clearing of trees and other plants take place on a gradual basis--as the area slated for inundation expands.

12. Pages 28-30.

M-16 There is much discussion of probable or possible negative impacts of the project on wildlife in this section, but little in terms of concrete measures are proposed to combat them. While such measures should be addressed under a wildlife management plan or other approach, I would like to see some signal that Molycorp is prepared to do more than just planning. It would be constructive to have a commitment expressed by the company to redress habitat loss or alteration, such as by replacement in kind.

13. Page 32, Item 3b.

M-17 Our Department would like to be included in water quality monitoring, especially as our fishery may be impacted (also applies to "Monitoring", on Page 33).

14. Page 32, item 4.

M-18 See comments above on clearing of vegetation (reference Page 28).

15. Page 32, Item 6.

M-19 See comments reference Page 2, Item 1.

16. Page 32, item 7.

M-20 The relocation of the wildlife watering device should be in consultation with our Department.

17. Page 32, item 8.

M-21 See comments reference Page 2, Item 6.

18. Page 33.

M-22 Monitoring plans do not go far enough, as I am concerned about much more than groundwater contamination. I feel that monitoring should be extended to include habitat and wildlife issues as well, not the least of which would be the use of the project area by game, nongame, and sensitive species.

M-23 I must again reiterate my request that this draft EA be expanded as necessary to produce an EIS. In addition, I believe that more data on the present environment (including habitats) and wildlife should be gathered, in order to gauge more
M-24 precisely the likely impacts and to provide better insights into ameliorating the negative aspects. I question whether the Guadalupe Mountain site is superior to

M-15 While this recommendation has merit, it is not feasible because the source for dam fill material is from within the impoundment area.

M-16 Refer to response J-2 and Required Mitigation Measures #4 in Chapter 3 of the Final EA.

M-17 In a worst case situation and with the estimated dilution factors, there may be some chronic effects on aquatic organisms in the springs. The dilution by the groundwater and river systems virtually precludes any effects on the fisheries from seepage. Also see Required Mitigation Measure #1 in Chapter 3 of the Final EA.

M-18 See response M-15.

M-19 See response M-15.

M-20 A Habitat Management Plan has been developed with consultation, coordination and sign-off by the New Mexico Department of Game and Fish. This document will be referenced when relocating the Guadalupe Mountain catchment.

M-21 Appropriate text revision has been made.

M-22 Certain monitoring programs will certainly be warranted. Others would be difficult to justify. A monitoring evaluation study should be conducted and determinations made, as to what types and to what extent monitoring should be done.

M-23 See response F-1.

M-24 Refer to responses J-1, J-2, O-26 and O-36.

M-25 cont'd that at Cerro and whether public land use for the project is authorizable under the General Mining Law of 1872. Should the project be considered under a special use permit, then I recommend that the Fish and Wildlife Coordination Act apply and be
M-26 used to offset habitat losses.

M-27 In my call for more study of the wildlife and associated matters on Guadalupe Mountain, I take note of the timetable proposed by Molycorp for the project versus the apparent lack of real urgency for a new waste facility. It seems to me that such a facility will not be needed for several years to come, based on both the EA and other available information. Under the circumstances, additional studies of the proposed project area are certainly as feasible as they are desirable.

Sincerely,

Harold F. Olson

Harold F. Olson
Director

fm

cc: John Peterson,
Fish and Wildlife Service

M-25 Refer to response E-3 and M-2.

M-26 Refer to Required Mitigation Measure #4 in Chapter 3 of the Final EA. Refer also to response J-2.

M-27 The 43 CFR 3809 regulations contain a set timetable to which the BLM must adhere when reviewing a plan of operations. Also refer to responses E-1, F-1, O-26 and O-36.

April 21, 1983

U.S. Department of Interior
Bureau of Land Management
Albuquerque District
Taos Resource Area
P.O. Box 1045
Taos, N.M. 87571

Dear Sir/Madame:

N-1 In reviewing the Draft Environmental Assessment on the proposed Molybdenum Tailing Disposal Facility it is apparent that no recent study has been done concerning site-specific ground water characteristics, which at this point relies on information provided from a report by Winograd done in 1959. Until the effects to ground water are known I do not believe that the E.P.A., B.L.M. or U.S. Fish and Wildlife agencies should approve this project.

I do not agree with a statement made by B.L.M. personnel regarding Moly Corps right to build a disposal facility before impact studies can be completed and in fact negative impacts on the environment can be addressed 10-20 years later. It is my impression that the Bureau of Land Management is a Federal Agency and not an advocate for Moly Corp. If the B.L.M. personnel can not remain objective on this issue perhaps we need someone to monitor both Moly Corp and the B.L.M.

Sincerely,

Michael E. Archuleta, MSW
Michael E. Archuleta, M.S.W.
P.O. BOX 2031
Taos, N.M. [illegible]

MEA:ar

N-1 Very little information is available outside of the Winograd report except for additional ground water data and some water quality data. Also see response F-1 and Chapter 3, Water Resources, of the Final EA. Additional studies have been proposed by Molycorp as part of its State ground water discharge permit.

SOUTHWEST RESEARCH AND INFORMATION CENTER

April 22, 1983

District Manager
U.S. Bureau of Land Management
3550 Pan American Frwy., NE
Albuquerque, NM 87107

Dear Sir:

Please find enclosed a copy of Southwest Research and Information Center's Comments on the BLM's Draft Environmental Assessment for the Molycorp Inc. proposed Tailings Disposal Facility, Questa, N.M.

O-1 I call your attention to the general comments section of the enclosed. SRIC believes that preparation of a full-scale environmental impact statement is mandatory before BLM gives approval to this project. For the reasons stated in the comments, approval of the proposed tailings facility would constitute a "major federal action" significantly affecting the human environment within the meaning of the National Environmental Policy Act and its implementing Council on Environmental Quality guidelines and regulations. The Draft Environmental Assessment does not provide enough detail and basic data to determine the range of environmental consequences of the proposed action.

We trust that BLM will give serious consideration to this and other requests for preparation of an EIS. To do otherwise would not be in accordance with the statutory and regulatory requirements of NEPA.

Sincerely,

Chris Shuey
Research Associate

cc: Richard Niemeyer, BLM Taos
BLM Santa Fe office
Grove Burnett, Vallecitos
Toney Anaya, Governor

P.O. BOX 4524 ALBUQUERQUE NEW MEXICO 87106 505 - 262-1862

O-1 Refer to response F-1. See also Introduction, Chapter 1 of the Final EA.

Southwest Research and Information Center
COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT
Molycorp Inc. Molybdenum Tailings Disposal Facility

April 1983

GENERAL COMMENTS

O-2

The specific comments listed below demonstrate that the Draft Environmental Assessment (DEA) is wholly inadequate to judge the environmental consequences of the proposed Molycorp tailings disposal plan for the Guadalupe Mountain site west of Questa, N.M. Inadequacies and deficiencies in the data base not only prevent the public from ascertaining the potential effects of approval of the plan, but also put the U.S. Bureau of Land Management in a potentially vulnerable legal position with respect to compliance with the requirements of the National Environmental Policy Act (NEPA), 42 U.S.C. Sec. 4332 (C). For these reasons and the reasons listed below, a full-scale environmental impacts statement must be prepared for the Molycorp project.

BLM should be well aware that NEPA and its implementing Council on Environmental Quality (CEQ) guidelines, 40 C.F.R. Part 1500 *et seq*. (1973), and regulations, 40 C.F.R. Part 1500 *et seq*. (1979) require the preparation and circulation of a detailed environmental impact statement (EIS) to accompany every proposal for a major federal action which significantly affects the quality of the human environment. 42 U.S.C. (2)(C) and 40 C.F.R. Parts 1500.1, 1501.4, 1501.5, and 1502 (1979) require the responsible federal official of the lead agency to prepare a statement which includes the environmental impact of the proposed action, the unavoidable adverse environmental effects, alternatives to the proposed action, the relationship

O-2 See revised Chapter 1, Introduction. Also see response F-1.

between short term uses of the environment and maintenance of long-term productivity, and irreversible commitment of resources involved in the proposed action.

The DEA on the Molycorp proposal does not meet any of these requirements. Data so basic to determining environmental consequences -- such as fracture studies for the Guadalupe Mountain site and geohydrologic investigations of the permeability, transmissivity and storage coefficient of the underlying aquifers -- is either glossed over in unsubstantial terms or entirely missing. These deficiencies demonstrate a cavalier attitude on the part of BLM to meeting the mandate of NEPA when considering a "major federal action."

O-2 cont'd.

That the Molycorp tailings proposal is a major federal action is undisputable. Approval of the preferred alternative -- disposal at the Guadalupe Mountain site -- would remove at least 1,320 acres of public lands from multiple use and indirectly impact 7,000 to 8,000 acres, irreversibly destroy a prime habitat for numerous species of wildlife, and create the potential for degradation of ground and surface waters through seepage from the disposal site and possible major dam failures that would release millions of tons of tailings and wastewater to the Rio Grande and Red River. Construction of two 300- to 400-foot-high dams and deposition of 200 million tons of tailings over a 30-year period would create one of the largest waste disposal sites in New Mexico and the Southwest.

Molycorp's corporate plans should not dictate a hasty response to this proposal. The preparation of an EIS will not unduly delay the regulatory permitting for the project since molybdenum market conditions are not likely to improve substantially within the next few years. An EIS may identify data deficiencies and areas of investigation that would change the proposed list of

O-2 cont'd

migrating measures, or simply make the project unapprovable. Additionally, Molycorp must comply with other applicable state and federal environmental permitting requirements, including the filing of a groundwater discharge plan with the State of New Mexico.

Before proceeding any farther in the review of Molycorp's proposed tailings project, BLM must prepare an environmental impact statement and provide an opportunity for comment and public hearings on it.

SPECIFIC COMMENTS

page 1

O-3

1. What is the regulatory basis for citing a "need" for the project? Molycorp may have a "need" for expanding its tailings disposal areas to handle the waste from the milling of ore from its new underground mine, but the public may not have a need for molybdenum or may have a need for multiple use of the affected lands.

page 2

O-4

2. BLM states that initial construction would require about 2 to 3 million yards of material. What does this figure mean in cubic yards? And how many cubic yards of material will be needed over the period of construction of the dams to their maximum heights? From where will this material come? Will the planned excavation of the Guadalupe Mountain saddle provide enough material for construction of the two dams to their maximum height, or will material have to be "borrowed" from elsewhere and stockpiled at the site to meet dam construction needs?

O-3 The regulatory basis for analyzing the project are found in the Federal Land Policy and Management Act of 1976 (FLPMA) and the 43 CFR 3809 regulations. Under these authorities we are required to analyze the applicant's proposal. There is no requirement to analyze the marketability of molybdenum.

O-4 Appropriate corrections have been made. The unit of measure is cubic yards. The majority of the material will be from within the impoundment area for the proposed tailings facility. If additional material is needed and is beyond the supply from the proposed tailings area, the company will bring in material from their private holdings elsewhere.

O-5 3. Under the section dealing with mitigating measures, BLM should list how it plans to enforce these restrictions, otherwise they will not be worth the paper they are written on. For instance, chemical stabilizers have been shown to degrade within a few years causing tailings to be resuspended as fugitive dust; a good example is the Tuba City, Ariz., inactive uranium tailings pile. Dust emissions from the existing tailings area have been identified as a concern of Questa residents. BLM must demonstrate that it will monitor Molycorp's operations to ensure that these requirements are met.

O-6 4. BLM has no way of knowing if mitigating measure No. 5 will be complied with. It has not stated how it will communicate with the appropriate state and federal agencies to determine compliance with other applicable regulations. Neither has it demonstrated, due to the technical weaknesses in the DEA, that it has the expertise and capability of enforcing these restrictions.

pages 3-4

O-7 5. BLM presents no data to support the contention that the Cerro site will require more land and has potentially greater groundwater problems than the Guadalupe Mountain site. For instance, why wouldn't shallow groundwater at the proposed site be any less jeopardized than groundwater at the Cerro site which is only three miles north of Guadalupe Mountain? Are groundwater characteristics at the Cerro site any different from those at the proposed site? Is the Cerro site similar geologically, that is, composed largely of volcanic material? Did BLM analyze alternative disposal sites independent of Molycorp's investigation in its plan of operations, or based on that plan?

O-8 6. BLM should discuss in much greater detail its rationale for adopting a "nondiscretionary authority" over Molycorp's proposal. This is especially

O-5 A comprehensive monitoring plan will be developed to ensure enforcement of those stipulations attached to the permit.

O-6 These regulations are required by other agencies, both state and Federal. Enforcement is the responsibility of these agencies, such as EID, EPA, and the State Engineer, and not the BLM.

O-7 Refer to response E-3. See also Alternative Section, Chapter 1 of the Final EA.

O-8 The rationale for adopting a "nondiscretionary authority" position is clearly spelled out in the General Mining Law of 1872, which grants a statutory right to any citizen to enter public land for the purpose of extracting and/or processing mineral commodities. This law does not require that an individual obtain a permit from the Federal government, nor is there any provision for environmental controls.

While the Federal Land Policy and Management Act of 1976 (FLPMA) amended the General Mining Law of 1872 by granting the Secretary of the Interior the authority to ensure that mining/milling operations do not result in unnecessary and undue degradation of the public lands, it did not establish a permitting process wherein the BLM could approve or deny a mining permit.

As the BLM interprets both laws, a plan of operations can only be denied where the environmental impacts after the application of mitigating measures would still result in unnecessary and undue degradation of the public lands. Refer to response K-1 and Introduction, Chapter 1 of the Final EA.

0-8 contd. important in light of BLM's inference on page 4 that it can only deny actions that impact endangered plant and/or animal species and statement on page 5 that it lacks important information on endangered plants and animals. All applicable federal laws and regulations, including those under the General Mining Law of 1972 and the Federal Land Policy and Management Act (FLPMA) of 1976 and its implementing regulations, should be discussed in terms of the authorities BLM cites for nondiscretion in approving or denying the proposed project. All case law pertaining to BLM's position should be summarized for public review.

0-9 7. What is BLM's basis for claiming that the U.S. Environmental Protection Agency must "strike a compatible balance between human activities and the ability of natural systems to support and nurture life"?

page 5

0-10 8. Under its authority for water pollution control, The New Mexico Environmental Improvement Division (NMEID) requires a groundwater discharge plan for discharges to waters of 10,000 milligrams per liter (mg/l) or less in accordance with Sec. 3-101.A. of the regulations of the New Mexico Water Quality Control Commission (NMWQCC). A discharge plan must be approved by the Director of NMEID before a new discharge is permitted (NMWQCCR, 3-106 and 3-109). Why did BLM chose to omit discussion of this important permitting requirement in the DEA's section on EID responsibilities?

0-11 9. Under the discussion on the responsibilities of the New Mexico State Engineer, BLM states, "To determine the stability of the tailings dams once they are buildt [sic], the State Engineer will do a stability analysis." Will this analysis be conducted after approval of the project and design and

0-9 This statement has been deleted in the Final EA.

0-10 The EID has notified Molycorp that it will require a ground water discharge plan. We are cooperating with EID in the assessment of impacts and mitigating measures to be applied.

0-11 The State Engineer is involved in the approval of all stages of the project. Before construction of the tailings dams can begin, approval of the design must be obtained. As the facility is being constructed there are further inspections and approvals. Stability analyses are conducted at completion of the various lifts of each dam and each new lift requires approval prior to construction. Final abandonment of the project must also be approved.

BLM does not incorporate results of the analyses into the permitting of the project. The State Engineer is responsible for safety inspections although the BLM is responsible for monitoring the operation for compliance with federal mining regulations.

O-11 cont'd. construction of the dams? Does the State of New Mexico permit the construction of waste storage structures prior to permitting? How will BLM incorporate the results of this analysis in its permitting of the project? Which agency will be responsible for inspection?

O-12 10. BLM does not discuss ways it will resolve some of the problems posed by "unavailable information." The impression is that BLM will approve this project without even attempting to conduct the studies and investigations necessary to supply the important information that is suggested to be lacking by the four "unavailable information" issues on page 5.

O-13 11. Under unavailable information item No. 1, BLM suggests there are no health effects from exposure to fugitive dust because "there is no way of adequately assessing tailings dust impacts." Two years of study is not a sufficiently long enough period to gauge the health effects from any environmental contaminant, especially in the absence of epidemiologic data. Additionally, BLM appears not to have assessed the validity of EID's reported contention that dust from the molybdenum tailings cannot be distinguished from dust from other sources. Why is this true?

O-14 12. The discussion on unavailable information on existing groundwater conditions and potential for contamination indicates that BLM does not consider these matters to be serious enough for consideration in the DEA, simply because EID will require detailed investigations under its discharge plan permitting regulations.

O-15 A major federal action significantly affecting the quality of the human environment deserves more than a statement akin to "we don't know." Apparently someone does. Page 26 of the DEA apparently cites a Molycorp consultant analysis as indicating that seepage from the disposal site will be rapid and

O-12 See responses F-1, F-2 and F-6.

O-13 There is no documented evidence that the previous 15 years' operation of the tailings ponds have resulted in a significant health hazard in the Questa area.

Since the geologic material at the Moly mine is very similar to the geologic material found in the vicinity of Questa and Guadalupe Mountain, there is no way, either through chemical or physical analysis, that dust from the tailings could be distinguished from local material. Consequently, there is no reason to assess the validity of EIDs data. However, the State EID is has conducted additional air quality studies. The results have not yet been released.

O-14 Refer to response D-1. See also revised Chapter 3, Water Resources and Recommended Mitigation Measures of the Final EA.

O-15 Refer to response D-1. See also Chapter 3, Water Resources and Recommended Mitigation Measures, of the Final EA.

O-15 contd.

will likely reach the Rio Grande Wild and Scenic River area within one year of the beginning of operations. BLM offers no information on how the consultant arrived at this determination. Without reading Molycorp's Plan of Operations, it is not even clear if that determination was made by the company's consultant or BLM on the basis of guesses. BLM also apparently made no effort to assess this problem on the basis of groundwater impacts from seepage from the existing tailings ponds. Doesn't Molycorp have groundwater monitoring data from its current operations?

Disposal on top of normally permeable and fractured basalts is likely to cause immediate and possibly irreparable groundwater degradation. However, not even this possibility can be assessed without the data basic to an understanding of hydrologic conditions at the site. BLM's lackadaisical attitude toward what may be the most important issue in the pre-operational approval of this project casts doubts on whether the agency has adequately and competently considered the other potential environmental impacts of the proposed tailings operation. If for no other reason, an EIS should be prepared to inform area groundwater users the risk their limited supplies of water may face in 10, 20 and 30 years.

page 7

O-16

13. Air Quality. The discussion here also is wholly inadequate. The use of the word "appears" to describe the air around Questa as "excellent" implies that BLM's investigation into air quality consisted of sending an employee outside on a clear day and recording his/her observations. The analysis must be more detailed. For instance, what is the classification of the Guadalupe Mountain area under the Prevention of Significant Deterioration standards?

O-16 The classification of the Guadalupe Mountain area is Class II under the PDS standards. Questa Station f3ZA is located in Region 3 of the state. For 1981 and 1982, particulate concentrations for a 24 hour period were 399 and 301 micrograms per cubic meter. The annual geometric mean was 49 (54 samples) and 34 (52 samples) micrograms per cubic meter. This data was taken from the State of New Mexico, Health and Environmental Department, Environmental Improvement Division Air Quality Report for 1981-1982.

The winds may carry particulates to Questa because the village is east of Guadalupe Mountain and the prevailing winds are out of the west and southwest.

O-16 cont'd What are the "levels" of particulates at Questa which reportedly are within state and federal standards? Why would prevailing northeasterly or easterly winds not carry particulates from the proposed site to Questa? Isn't Questa east of Guadalupe Mountain?

O-17 14. Surface Water Quality. What are the possible causes of "higher than normal values for molybdenum and manganese" in the Red River? Could such degradation of surface water quality be a result of upstream releases of untreated or improperly treated mine effluent? of releases from breaks in slurry pipelines? of chronic contamination from releases of effluents many years ago?

O-18 15. Table 1 (page 8). What are the applicable water quality standards for New Mexico streams? They should be listed along with the site-specific quality data for comparison. Are there different standards for different stream uses? It is stated on page 7 that "Water quality of the two rivers is designated as cold water fishery, fish culture, [etc.]..." Rivers are designed as cold water fisheries, water quality is described in terms of chemistry. Not only is the wording and writing wrong here, but the description says nothing about the actual chemical quality of the streams, only the uses the rivers are capable of sustaining. The chemical information is contained in Table 1.

O-19 16. Table 2 (page 9). What are the concentrations of the major anions and cations in the Molycorp. tailings water? Why weren't such parameters as sulfates and chlorides listed? Is the water high in total dissolved solids? Are there pre-disposal treatment processes which limit the concentrations of certain metals?

8

O-17 The water entering the Red River between the Town of Red River and the Fish Hatchery is naturally higher then normal for both elements. The manganese concentrations are slightly elevated below the Molycorp tailings outfall. The concentration of Molybdenum is more dramatically affected. Water quality monitoring data that could statistically verify these hypotheses has been analyzed by the BLM and is available for review in the Taos Resource Area Office.

O-18 There are no standards for most of the parameters listed. Standards that would apply include:

Dissolved Oxygen - 76.0 mg/l.
pH - 6.6 to 8.8
Temperature - 20 C

O-19 Information on concentrations of these two parameters was not supplied by Molycorp or the EID. The concentrations of anions and cations other than those presented were determined not to be critical. Specific conductance is included in Table 7, Chapter 3, Water Resources.

page 10

0-20 17. Groundwater. Was the estimate of seepage travel to the Rio Grande within 1 year (page 26) based on the depth to the regional water table described here as 750 feet per year? How was the depth to the water table determined? What are the uses and existing chemical quality of this groundwater? What is the geological setting of this aquifer?

0-21 18. Table 3 (page 11). Data for the seepage column are cited to "average values" reported by Molycorp to the EPA under Molycorp's existing NPDES (National Pollutant Discharge Elimination System) permit. BLM should explain how an NPDES permit regulates chemical concentrations in groundwater, especially those derived from seepage from a waste storage pond. Does Molycorp actually monitor groundwater quality from a series of monitoring wells fur the purpose of demonstrating compliance with NPDES permit requirements (which usually limit the chemical characteristics and flow of effluents to surface waterways, not groundwater)?

page 13

0-22 19. Geology. What are BLM's references for the information contained in the DEA's three sentences on site geology? How does BLM know that the basaltic rock under the proposed site is "highly fractured"? Have fracture studies been performed? Are fractures the result of area volcanism or larger, regional tectonic processes? How does BLM know that the depth of the volcanic layers is 500 feet or greater? What geologic material underlies the volcanics? How deep is it?

0-20 The time of travel of seepage water to the Red River system has been revised for the final EA. The depth from the bottom of the tailings pond (assumed to be excavated by approximately 100 feet) is assumed to be 650 feet.

The uses and existing quality of the ground water to the south and west of the site were discussed in the Draft EA.

The geologic setting of the aquifer has been described in the Final EA in the geology section.

0-21 The NPDES premit is a Federal (EPA) surface discharge permit only and does not regulate groundwater quality. The State of New Mexico (EID) regulates groundwater quality through the issuance of groundwater discharge permits, which require that applicants prove that their operations will not violate state water quality standards. Permits are not granted unless the EID is satisfied that state water quality standards will not be violated. To ensure that water quality standards are maintained, groundwater is monitored and samples taken and analyzed. Tables 2 and 3 of the DEA have been combined into Table 2 of the Final EA and show the quality of tailings water instead of water seeping to the surface below the existing tailings dams.

0-22 See Geology section in Chapter 2 of the Final EA.

page 17

0-23 20. What is meant by the "T or E Status" column in Table 4?

page 18

0-24 21. Does BLM have supporting data or is it guessing when it states, "The marten, black-footed ferret...and sage grouse have potential occurrence in Taos County but are probably too rare to be found on the proposed tailings disposal site"?

0-25 22. What are the "big game" species that the DEA says are "significant species for this EA"?

0-26 23. The text on page 18 says birds of prey "may use" various parts of the proposed site, yet Table 5 (page 19) lists raptors "using" the proposed site. Do or do not goshawks, bald eagles and other birds currently use Guadulupe Mountain as a habitat? Has BLM conducted any studies to find out?

page 23

0-27 24. It seems hard to imagine a 300- to 400-foot-high dam on either side of Guadalupe Mountain not attracting the attention of visitors to the Scenic River area. Does the existing topography already prevent view of Guadalupe Mountain from the Rio Grande?

0-28 25. The list of archeological sites and other cultural and historic resources of the area suggest that a portion of North American history many thousands of years old will be destroyed by construction of the tailings disposal facility on Guadalupe Mountain. These resources have an ageless, invaluable intrinsic worth that no amount of mitigation is likely preserve.

0-23 That column notes the legal status of any Threatened or Endangered (T or E) species that are listed.

0-24 The site does not support any prairie dog populations required for black-footed ferret habitat, nor does the millsite location meet the habitat requirements for martens. The site could possibly support sage grouse, but the area is unoccupied by the species.

0-25 These species are listed under Harvest Species on page 18 of the Draft EA.

0-26 The title to Table 5 has been revised. All of the species on this list are expected to frequent the area. A contracted avian study has been initiated and is ongoing.

0-27 No, the existing topography does not prevent a view of Gusdalupe Mountain from the Rio Grande recreation area.

0-28 Refer to Cultural Resources and Required Mitigation Measures, Chapter 3 of the Final EA.

page 25

0-29 26. Air Quality. When will the "additional data and analysis" be performed to determine and resolve the impact the proposed action will have on existing air quality?

0-30 27. Surface Water. What is the reference or basis for the supposition that "No violation of the new [NPDES] permit is anticipated due to the development of the Guadalupe Mountain site"?

0-31 28. Ground Water. Did Molycorp's consultant compute seepage velocity to the Rio Grande based on travel time through the regional aquifer that is 750 feet below the tailings site or through the shallow aquifer that is 90 feet below the Cerro alternative site? Do the rocks along the Rio Grande at its confluence with the Red River discharge water to the rivers? How deep are the BLM recreational wells that could be impacted by seepage movement (page 26)? Are there municipal, county, state or other federal domestic water wells in the area which could be at risk? Are there senior water rights which could be impaired by seepage of toxic liquids from the Molycorp facility?

page 26

0-32 29. The size of the proposed tailings disposal facility can be better appreciated by comparing it with other waste storage structures at mining operations. For instance, the largest active uranium mill tailings pile in the U.S. is a little more than 30 million tons. In fact, all 200 million tons of uranium mill tailings generated in the U.S. since the mid-1940s at about 60 different sites nationwide would fit inside the proposed Molycorp facility.

0-33 30. Has BLM consulted the State Engineer for expert opinion on the ability of earthen materials consisting almost entirely of volcanic debris to

0-29 The State EID is has conducted addtional air quality studies. The results have not yet been released.

0-30 The recently approved NPDES permit granted to Molycorp by EPA contains stricter standards on water discharge, particularly in regards to molybdenum. The new ion-exchange plant will remove excess molybdenum to bring surface water discharge into compliance with these standards.

0-31 We assumed the original consultant used the hydraulic conductivity of the rock below the proposed site. The second study, by Water Resources Associates used the hydraulic conductivity of the dam site in modeling. There is no apparent discharge from the canyon wall along the Rio Grande at its confluence with the Red River.

The BLM wells are 415 feet (Chiflo) and 530 feet (visitor center) in depth. There are no other wells downgradient of the proposed site.

0-32 A comparison of other molybdenum tailings facilities to the proposed Guadalupe Mountain facility is more valid than a comparison of uranium facilities. When compared to other molybdenum tailings sites, the Guadalupe site is not excessively large, since the new Climax Mayflower site in Colorado is nearly 3 miles long and sa has a storage capacity of 576 million tons, as compared to the Guadalupe Mountain site which is approximately 1 mile long and has a storage capacity of 200 million tons.

0-33 BLM has not consulted the State Engineer's office concerning the ability of volcanic debris to withstand mechanical stress. Although BLM approves the plans of operations, Molycorp cannot begin construction of the tailings facility until it has submitted its project design to the State Engineer's office for review and approval. That office reviews all designs and analyses, including dam stability, prior to approval of any construction.

0.33 cont'd withstand earthquake stresses, tailings loading stresses and other physical and mechanical processes that lead to dam instability?

0.34 31. The notion that tailings slimes seal the bottom of a disposal pit, thereby inhibiting or altogether preventing seepage, is fallacious. No material known to engineers is totally imprevious. BLM should have reviewed EID's files for information on seepage from licensed uranium tailings facilities. All have accumulated slime layers below evaporation ponds and above unlined pond basements, and all have seepage problems of varying severity. A layer of compacted clays below the slimes in one of two borrow pits at the United Nuclear Church Rock facility has not prevented seepage; monitoring wells within 200 feet downgradient of the pit have shown pH concentrations typical of tailings solution.

page 28

0.35 32. What is BLM's basis for the statement that mule deer populations "should" increase if reclamation is performed adequately and there are few other activities at the site after reclamation?

pages 31-33

0.36 33. In the section on mitigating measures and monitoring, there is no discussion on reclamation requirements. The only substantive reference to reclamation in the entire DEA is on page 3, item No. 7, which states that reclamation will be completed according to the provisions of 43 C.F.R. 3809.1-3(d). BLM gives no indication of what these provisions are and whether it will enforce them. Reclamation is an essential requirement of all proposed land-disturbance plans; BLM belittles the subject by not discussing it in detail.

0-34 While tailings slimes will not entirely prevent seepage, they will reduce it substantially due to the extremely small particle size (8 x 10^{-3} mm) of the tailings material, which forms an effective sealant on the bottom of a tailings pond. Refer also to Chapter 3, Geology, Water Resources, and Required Mitigation Measures, in Chapter 3 of the Final EA.

0-35 See Wildlife section, Chapter 3, of the Final EA.

0-36 A reclamation plan will be developed upon approval of the Plan of Operations. Also see Required Mitigation in Chapter 3 of the Final EA. The existing study contract mentioned in response 0-26 ties existing populations to habitats. The primary intent of this contract is to determine the extent of reclamation, and to which types of habitats. This information will also be used in the Wildlife habitat management plan as mentioned in the Mitigating Measures That Are Part Of The Proposed Action section, Chapter 1 of the final EA.

34. BLM is under no authority to consider cost when developing baseline water quality information; if it is, those authorities should be cited. Otherwise, $3,000 to $6,000 per year is a small price to pay to develop basic information about the effects of the proposed action.

0-37

0-37 Significant additional information has been and will be developed concerning groundwater. Refer to response D-1. Costs referred to in the Draft EA were included for the purpose of information only. Baseline information has been and will continue to be collected for both surface and groundwater.

April 10, 1983

From: Dane Myers
2941 Plaza Azul
Santa Fe, N.M. 87501
ph. 471-0046

To: New Mexico State Land Office
310 Old Santa Fe Trail
Santa Fe, N.M. 87503

To whom it may concern,

I beleive it wise of you to extend the amount of time for public response concerning Molycorp's latest desire. Here is my response:

My concerns are great and not, i beleive, without justification. Molycorp wishes help from the state — but before that may be granted they must prove their value and worthiness to us. It is true that they employ many of our residents; however as a prerequisite to our aid they must display adequate concern for the preservation of our land + environmental protection. In my judgement, Molycorp's history has shown their interest in the welfare of the land to be questionable if not inadequate. Now they have submitted questionable proof in favor of their desires. Can we afford to be subordinate to their wishes? I think not. Their past should compel us to be cautious, to be weary. In the interest of environmental preservation and state stability we must not be subordinate to their concerns: they should show subordination to ours.

Yours,

Dane B. Myers

APPENDICES

APPENDIX A

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
43 CFR Part 3800
(Circular No. 2521)

Surface Management of Public Lands Under U.S. Mining Laws

Under the authority of sections 2319 (30 U.S.C. 22) and 2478 (43 U.S.C. 1201) of the Revised Statutes and the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.). Part 3800, Title 43 of the Code of Federal Regulations is revised by adding a new Subpart 3809 as set forth below.

Part: 3800 - Mining Claims Under The General Mining Laws

General

Subpart 3809 - Surface Management

Sec.	
3809.0-1	Purpose.
3809.0-2	Objectives.
3809.0-3	Authority
3809.0-5	Definitions.
3809.0-6	Policy.
3809.1	Operations
3809.1-1	Reclamation
3809.1-2	Casual use-negligible disturbance.
3809.1-3	Notice - disturbance of 5 acres or less.
3809.1-4	Plan of operations - when required.
3809.1-5	Filing and contents of plan of operations.
3809.1-6	Plan approval.
3809.1-7	Modification of plan.
3809.1-8	Existing operations.
3809.1-9	Bonding requirements.
3809.2	Prevention of unnecessary or undue degradation.
3809.2-1	Environmental assessment.
3809.2-2	Other requirements for environmental protection.
3809.3	General provisions.
3809.3-1	Applicability of State law.
3809.3-2	Noncompliance.
3809.3-3	Access.
3809.3-4	Fire prevention and control.
3809.3-5	Maintenance and public safety.
3809.3-6	Inspection.
3809.3-7	Period of non-operation.
3809.4	Appeals.
3809.5	Public availability of information.
3809.6	Special provisions relating to mining claims patented within the boundaries of the California Desert Conservation Area.

General

Subpart 3809 - Surface Management

§ 3809.0-1 Purpose.

The purpose of this subpart is to establish procedures to prevent unnecessary or undue degradation of federal lands which may result from operations authorized by the mining laws.

§ 3809.0-2 Objectives.

The objectives of this regulations are to:

(a) Provide for mineral entry, exploration, location, operations, and purchase pursuant to the mining laws in a manner that will not unduly hinder such activities but will assure that these activities are conducted in a manner that will prevent unnecessary or undue degradation and provide protection of nonmineral resources of the federal lands:

(b) Provide for reclamation of disturbed areas; and

(c) Coordinate, to the greatest extent possible, with appropriate State agencies, procedures for prevention of unnecessary or undue degradation with respect to mineral operations.

§ 3809.0-3 Authority.

(a) Section 2319 of the Revised Statutes (30 U.S.C. 22 et seq.) provides that exploration, location and purchase of valuable mineral deposits under the mining laws, on federal lands shall be "under regulations prescribed by law," and section 2478 of the Revised Statutes, as amended (43 U.S.C. 1201), provides that those regulations shall be issued by the Secretary.

(b) Sections 302, 303, 601, and 603 of the Federal and Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) require the Secretary to take any action, by regulation or otherwise, to prevent unnecessary or undue degradation of the federal lands, provide for enforcement of those regulations, and direct the Secretary to manage the California Desert Conservation Area under reasonable regulations which will protect the scenic, scientific, and environmental values against undue impairment, and to assure against pollution of streams and waters.

(c) The Act of July 23, 1955 (30 U.S.C. 612) provides that rights under mining claims located after July 23, 1955, shall prior to issuance of patent therefor be subject to the right of the United States to manage and dispose of the vegetative surface resources and to manage other surface resources. The Act also provides that "Any mining claim hereafter located under the mining laws of the United States shall not be used, prior to issuance to patent therefor, for any purposes other than prospecting mining or processing operations and uses reasonably incident thereto.

(d) Section 9 of the Wild and Scenic Rivers Act (16 U.S.C. 1280) provides that regulations issued shall, among other things, provide safeguards against pollution of the rivers involved and unnecessary impairment of the scenery within the area designated for potential addition to, or an actual component of the national wild and scenic rivers system.

§ 3809.0-5 Definitions

As used in this subpart, the term:

(a) "Authorized officer" means any employee of the Bureau of Land Management to whom authority has been delegated to perform the duties described in this subpart.

(b) "Casual Use" means activities ordinarily resulting in only negligible disturbance of the federal lands and resources. For example, activities are generally considered "casual use" if they do not involve the use of mechanized earth moving equipment or explosives or do not involve the use of motorized vehicles in areas designated as closed to off-road vehicles as defined in subpart 8340 of this title.

(c) "Federal lands" means lands subject to the mining laws including but not limited to, the certain "public lands" defined in section 103 of the Federal Land Policy and Management Act of 1976. Federal lands does not include lands in the National Park System, National Forest System, nor Stockraising Homestead lands or lands where only the mineral interest is reserved to the United States or lands under Wilderness Review and administered by the Bureau of Land Management (these lands are subject to the 43 CFR Part 3802 regulations).

(d) "Mining claim" means any unpatented mining claim, millsite, or tunnel site located under the mining laws and those patented mining claims and millsites located in the California Desert Conservation Area which have been patented subsequent to the enactment of the Federal Land Policy and Management Act of October 21, 1976.

(e) "Mining Laws" mean the Lode Law of July 26, 1866, as amended (14 Stat. 251); the Placer Law of July 9, 1870, as amended (16 Stat. 217); and the Mining Law of May 10, 1872, as amended (17 Stat 91); and all laws supplementing and amending those laws including among others the Building Stone Act of August 4, 1892, as amended (27 Stat. 348); and the Saline Placer Act of January 31, 1901 (31 Stat. 745)

(f) "Operations" means all functions, work, facilities, and activities in connection with prospecting, discovery and assessment work, development, extraction, and processing of mineral extraction and processing of mineral deposits locatable under the mining laws and all other uses reasonably incident thereto, whether on a mining claim or not, including but not limited to the construction of roads, transmission lines, pipelines, and other means of access for support facilities across federal lands subject to these regulations.

(g) "Operator" means a person conducting or proposing to conduct operations.

(h) "Person" means any citizen of the United States or person who has declared the intention to become such and includes any individual partnership, corporation, association, or other legal entity.

(i) "Project area" means a single tract of land upon which an operator is, or will be, conducting operations. It may include one mining claim or a group of mining claims under one ownership on which operations are or will be conducted, as well as federal lands on which an operator is exploring or prospecting prior to locating a mining claim.

(j) "Reclamation" means taking such reasonable measures as will prevent unnecessary or undue degradation of the federal lands, including reshaping land disturbed by operations to an appropriate contour and, where necessary, revegetating disturbed areas so as to provide a diverse vegetative cover. Reclamation may not be required where the retention of a stable highwall or other mine workings is needed to preserve evidence of mineralization.

(k) "Unnecessary or undue degradation" means surface disturbance greater than what would normally result when an activity is being accomplished by a prudent operator in usual, customary, and proficient operations of similar character and taking into consideration the effects of operations on other resources and land uses, including those resources and uses outside the area of operations. Failure to initiate and complete reasonable mitigation measures, including reclamation of disturbed areas or creation of a nuisance may constitute unnecessary or undue degradation. Failure to comply with applicable environmental protection statutes and regulations thereunder will constitute unnecessary or undue degradation. Where specific statutory authority requires the attainment of a stated level of protection or reclamation, such as in the California Desert Conservation Area, Wild and Scenic Rivers, areas designated as part of the National Wilderness System administered by the Bureau of Land Management and other such areas, that level of protection shall be met.

§ 3809.0-6 Policy.

Consistent with section 2 of the Mining and Mineral Policy Act of 1970 and section 102(a)(7)(8) and (12) of the Federal Land Policy and Management Act, it is the policy of the Department of the Interior to encourage the development of federal mineral resources and reclamation of disturbed lands. Under the mining laws a person has a statutory right, consistent with Departmental regulations, to go upon the open (unappropriated and unreserved) federal lands for the purpose of mineral prospecting, exploration, development, extraction and other uses reasonably incident thereto. This statutory right carries with it the responsibility to assure that operations include adequate and responsible measures to prevent unnecessary or undue degradation of the federal lands and to provide for reasonable reclamation.

§ 3809.1 Operations

§ 3809.1-1 Reclamation.

All operations, whether casual, under a notice, or by a plan of operations, shall be reclaimed as required in this title.

§ 3809.1-2 Casual use - negligible disturbance.

No notification to or approval by the authorized officer is required for casual use operations. However, casual use operations are subject to monitoring by the authorized office to ensure that unnecessary or undue degradation of federal lands will not occur.

§ 3809.1-3 Notice - disturbance of 5 acres or less.

(a) All operators on project areas whose operations, including access across federal lands to the project area, cause a cumulative surface disturbance of 5 acres or less during any calendar year shall notify the authorized officer in the District office of the Bureau of Land Management having jurisdiction over the land in which the claim(s) or project area is located. Prior to conducting additional operations under a subsequent notice, covering substantially the same ground, the operator shall have completed reclamation of operations which were conducted under any previous notice. Notification of such activities, by the operator, shall be made at least 15 calendar days before commencing operations under this subpart by a written notice or letter.

(b) Approval of a notice, by the authorized officer, is not required. Consultation with the authorized officer may be required under § 3809.1-3 (c)(3) of this title when the construction of access routes are involved. Notices properly filed under this section constitute authorization under part 8340 of this title (Off-Road Vehicles)

(c) The notice or letter shall include:

(1) Name and mailing address of the mining claimant and operator, if other than the claimant. Any change of operator or in the mailing address of the mining claimant or operator shall be reported promptly to the authorized officer.

(2) When applicable, the name of the mining claim(s) and serial number(s) assigned to the mining claim(s) recorded pursuant to subpart 3833 of this title on which disturbance will likely take place as a result of the operations;

(3) A statement describing the activities proposed and their location in sufficient detail to locate the activities on the ground, and giving the approximate date when operations will start. The statement shall include a description and location of access routes to be constructed and the type of equipment to be used in their construction. Access routes shall be planned for only the minimum width needed for operations and shall follow natural contours, where practicable, to minimize cut and fill. When the construction of access routes involves slopes which require cuts on the inside edge in excess of 3 feet, the operator may be required to consult with the authorized officer concerning the most appropriate location of the access route prior to commencing operations;

(4) A statement that reclamation of all areas disturbed will be completed to the standard described in § 3809.1-3(d) of this title and that reasonable measures will be taken to prevent unnecessary or undue degradation of the federal lands during operations.

(d) The following standards govern activities conducted under a notice:

(1) Access routes shall be planned for only the minimum width needed for operations and shall follow natural contour, where practicable to minimize cut and fill.

(2) All tailings, dumps, deleterious materials or substances, and other waste produced by the operations shall be disposed of so as to prevent unnecessary or undue degradation in accordance with applicable Federal and State Laws.

(3) At the earlist feasible time, the operator shall reclaim the area disturbed, except to the extent necessary to preserve evidence of mineralization, by taking reasonable measures to prevent or control on-site and off-site damage of the federal lands.

(4) Reclamation shall include, but shall not be limited to:

(i) Saving of topsoil for final application after reshaping of disturbed areas have been completed;

(ii) Measures to control erosion, landslides, and water runoff;

(iii) Measures to isolate, remove, or control toxic materials;

(iv) Reshaping the area disturbed, application of the topsoil, and revegetation of disturbed areas, where reasonably practicable; and

(v) Rehabilitation of fisheries and wildlife habitat.

(5) When reclamation of the disturbed area has been completed, except to the extent necessary to preserve evidence of mineralization, the authorized officer shall be notified so that an inspection of the area can be made.

(e) Operations conducted pursuant to this subpart are subject to monitoring by the authorized officer to ensure that operators are conducting operations in a manner which will not cause unnecessary or undue degradation.

(f) Failure of the operator to prevent undue or unnecessary degradation or to complete reclamation to the standards described in this subpart may cause the operator to be subject to a notice of noncompliance as described in § 3809.3-2 of this title.

§ 3809.1-4 Plan of operations - when required.

An approved plan of operations is required prior to commencing

(a) Operations which exceed the disturbance level (5 acres) described in §3809.1-3 of this title.

(b) Any operation, except casual use, in the following designated areas:

(1) Lands in the California Desert Conservation Area designated as controlled" or "limited" use areas by the California Desert Conservation Area plan;

(2) Areas designated for potential addition to, or an actual component of the National Wild and Scenic Rivers system,

(3) Designated Areas of Critical Environmental Concern;

(4) Areas designated as part of the National Wilderness Preservation System and administered by the Bureau of Land Management;

(5) Areas designated as "closed" to off-road vehicle use as defined in subpart 8340 of this title.

(c) Plans properly filed and approved under this section constitute authorization under part 8340 of this title (Off-Road Vehicles).

§ 3809.1-5 Filing and contents of plan of operations.

(a) A plan of operations must be filed in the District Office of the Bureau of Land Management having jurisdiction over the federal lands in which the claim(s) or project area is located.

(b) No special form is required for filing a plan.

(1) The name and mailing address of the operator (and claimant if not the operator). Any change of operator or change in the mailing address shall be promptly reported to the authorized officer;

(2) A map, preferably a topographic map, or sketch showing existing and/or proposed routes of access, aircraft landing areas, or other means of access, and size of each area where surface disturbance will occur;

(3) When applicable, the name of the mining claim(s) and mining claim serial numbers assigned to the mining claim(s) recorded pursuant to subpart 3833 of title.

(4) Information sufficient to describe or identify the type of operations proposed, how they will be conducted and the period during which the proposed activity will take place;

(5) Measures to be taken to prevent unnecessary or undue degradation and measures to reclaim disturbed areas resulting from the proposed operations including the standards listed in §3809.1-3(d) of this title. Where an operator advises the authorized officer that he/she does not have the necessary technical resources to develop such measures the authorized officer will assist the operator in developing such measures. If an operator submits reclamation measures, the authorized officer will ensure that the operator's plan is sufficient to prevent unnecessary or undue degradation. All reclamation measures developed by the operator, or by the authorized officer in conjunction with the operator, shall become a part of the plan of operations.

(6) Measures to be taken during extended periods of nonoperation to maintain the area in a safe and clean manner and to reclaim the land to avoid erosion and other adverse impacts. If not filed at the time of plan submittal, this information shall be filed with the authorized officer whenever the operator anticipated a period of nonoperation.

§ 3809.1-6 Plan approval

(a) A proposed plan of operations shall be submitted to the authorized officer, who shall promptly acknowledge receipt thereof to the operator. The authorized officer shall, within 30 days of such receipt, analyze the proposal in the context of the requirement to prevent unnecessary or undue degradation and provide for reasonable reclamation and shall notify the operator.

(1) That the plan is approved; or

(2) Of any changes in or additions to the plan necessary to meet the requirements of these regulations; or

(3) That the plan is being reviewed, but that a specified amount of time not to exceed an additional 60 days, is necessary to complete the review, setting forth the circumstances which justify additional time for review. However, days during which the area of operations is inaccessible for inspection shall not be counted when computing the 60 day period; or

(4) That the plan cannot be approved until 30 days after a final environmental statement has been prepered and filed with the Environmental Protection Agency; or

(5) That the plan cannot be approved until the authorized officer has complied with section 106 of the National Historic Preservation Act or section 7 of the Endangered Species Act.

(b) The authorized officer shall consult with the appropriate official of the bureau or agency having surface management responsibilities where such responsibility is not exercised by the Bureau of Land Management. Prior to plan approval the authorized officer shall obtain the concurrence of such appropriate official to the terms and conditions that may be needed to prevent unnecessary or undue degradation.

(c) The authorized officer shall undertake an appropriate level of cultural resource inventory of the area to be disturbed. The inventory shall be completed within the time allowed by these regulations for approval of the plan (30 days). The operator is not required to do the inventory but may hire an archaeologist approved by the Bureau of Land Management in order to complete the inventory more expeditiously. The responsibility for and cost of salvage of cultural resources discovered during the inventory shall be the Federal Government's. The responsibility of avoiding adverse impacts on those cultural resources discovered during the inventory shall be the operator's.

(d) Pending final approval of the plan, the authorized officer shall approve any operations that may be necessary for timely compliance with requirements of Federal and State laws, subject to any terms and conditions that may be needed to prevent unnecessary or undue degradation.

(e) In the event of a change of operators involving an approved plan of operations, the new operator shall satisfy the requirements of § 3809.1-9 of this title as it related to bonding.

§ 3809.1-7 Modification of plan.

(a) At any time during operations under an approved plan, the operator on his/her own initiative may modify the plan or the authorized officer may request the operator to do so.

(b) A significant modification of an approved plan must be reviewed and approved by the authorized officer in the same manner as the initial plan.

(c)(1) If, when requested to do so by the authorized officer, the operator does not furnish a proposed modification within a reasonable time, usually 30 days, the authorized officer may recommend to the State Director that the operator be required to submit a proposed modification of the plan. The recommendation of the authorized officer shall be accompanied by a statement setting forth the facts and the reasons for the recommendations.

(2) In acting upon such recommendations the State Director shall determine, within 30 days whether:

(i) All reasonable measures were taken by the authorized officer at the time the plan was approved to ensure that the proposed operations would not cause unnecessary or undue degradation of the federal land;
(ii) The disturbance from the operations of the plan as approved or from unforeseen circumstances is or may become of such significance that modification of the plan is essential in order to prevent unnecessary or undue degradation; and
(iii) The disturbance can be minimized using reasonable means.

(3) Once the matter has been sent to the State Director, an operator is not required to submit a proposed modification of an approved plan until a determination is made by the State Director. Where the State Director determines that a plan shall be modified, the operator shall timely submit a modified plan to the authorized officer for review and approval.

(4) Operations may continue in accordance with the approved plan until a modified plan is approved, unless the State Director determines that the operations are causing unnecessary or undue degradation to the land. The State Director shall advise the operator of those reasonable measures needed to avoid such degradation and the operator shall immediately take all necessary steps to implement those measures within a reasonable period established by the State Director.

§ 3809.1-8 Existing operations.

(a) Persons conducting operations on the effective date of these regulations, who would be required to submit a notice under § 3809.1-3 or a plan of operations under § 3809.1-4 of this title may continue operations but shall within:

(1) 30 days submit a notice with required information outlined in § 3809.1-3 of this title for operations where 5 acres or less will be disturbed during a calendar year or

(2) 120 days submit a plan in those areas identified in § 3809.1-4 of this title. Upon a showing of good cause, the authorized officer may grant an extension of time, not to exceed an additional 180 days, to submit a plan.

(b) Operations may continue according to the submitted plan during its review. If the authorized oficer determines that operations are causing unnecessary or undue degradation of the federal lands involved, the authorized officer shall advise the operator of those reasonable measures needed to avoid such degradation, and the operator shall take all necessary steps to implement those measures within a reasonable time recommended by the authorized officer. During the period of an appeal, if any, operations may continue without change, subject to other applicable Federal and State laws.

(c) Upon approval of a plan by the authorized officer, operations shall be conducted in accordance with the approval plan.

§ 3809.1-9 Bonding requirements.

(a) No bond shall be required for operations that constitute casual use (§ 3809.1-2) or that are conducted under a notice (§ 3809.1-3 of this title).

(b) Any operator who conducts operations under an approved plan of operations as described in § 3809.1-5 of this title may, at the discretion of the authorized officer, be required to furnish a bond in an amount specified by the authorized officer. The authorized officer may determine not to require a bond in circumstances where operations would cause only minimal disturbance to the land. In determining the amount of the bond, the authorized officer shall consider the estimated cost of reasonable stabilization and reclamation of areas disturbed. In lieu of the submission of a separate bond, the authorized officer may accept evidence of an existing bond pursuant to State law or regulations for the same area covered by the plan of operations, upon a determination that the coverage would be equivalent to that provided in this section.

(c) In lieu of a bond, the operator may deposit and maintain in a Federal depository account of the United States Treasury, as directed by the authorized officer, cash in an amount equal to the required dollar amount of the bond or negotiable securities of the United States having a market value at the time of deposit of not less than the required dollar amount of the bond.

(d) In place of the individual bond on each separate operation, a blanket bond covering statewide or nationwide operations may be furnished at the option of the operator, if the terms and conditions as determined by the authorized officer, are sufficient to comply with these regulations.

(e) In the event that an approved plan is modified in accordance with § 3809.1-7 of this title, the authorized officer shall review the initial bond for adequacy and, if necessary, adjust the amount of the bond to conform to the plan as modified.

(f) When all or any portion of the reclamation has been completed in accordance with the approved plan, the operator may notify the authorized officer that such reclamation has occurred and that he/she seeks a reduction in bond or Bureau approval of the adequacy of the reclamation, or both. Upon any such notification, the authorized officer shall promptly inspect the reclaimed area with the operator. The authorized officer shall then notify the operator, in writing, whether the reclamation is acceptable. When the authorized officer has accepted as completed any portion of the reclamation, the authorized officer shall authorize that the bond be reduced proportionally to cover the remaining reclamation to be accomplished.

(g) When a mining claim is patented, the authorized officer shall release the operator from that portion of the performance bond which applies to operations within the boundaries of the patented land. The authorized officer shall release the operator from the remainder of the performance bond including the portion covering approved means of access outside the boundaries of the mining claim, when the operator has completed acceptable reclamation. However, existing access to patented mining claims, if across Federal lands shall continue to be regulated under the approved plan. The provisions of this subsection do not apply to patents issued on mining claims within the boundaries of the California Desert Conservation Area (See § 3809.6 of this title).

§ 3809.2 Prevention of unnecessary or undue degradation.

§ 3809.2-1 Environmental assessment.

(a) When an operator files a plan of operations or a significant modification which encompasses land not previously covered by an approved plan, the authorized officer shall make an environmental assessment or a supplement thereto to identify the impacts of the proposed operations on the lands and to determine whether an environmental impact statement is required.

(b) In conjunction with the operator, the authorized officer shall use the environmental assessment to determine the adequacy of mitigating measures and reclamation procedures included in the plan to insure the prevention of unnecessary or undue degradation of the land. If an operator advises he/she is unable to prepare mitigating measures, the authorized officer, in conjunction with the operator, shall use the environmental assessment as a basis for assisting the operator in developing such measures.

(c) If, as a result of the environmental assessment, the authorized officer determines that there is "substantial public interest" in the plan, the authorized officer shall notify the operator, in writing, that an additional period of time, not to exceed the additional 60 days provided for approval f a plan in § 3809.1-6 of this title, is required to consider public comments on the environmental assessment.

§ 3809.2-2 Other requirements for environmental protection.

All operations, including casual use and operations under either a notice (§ 3809.1-3) or a plan of operations (§ 3809.1-4 of this title) shall be conducted to prevent unnecessary or undue degradation of the federal lands and shall comply with all pertinent Federal and State laws, including but not limited to the following:

(a) Air Quality. All operators shall comply with applicable Federal and State air quality standards, including the Clean Air Act (42 U.S.C. 1857 et seq.).

(b) Water Quality. All operators shall comply with applicable Federal and State water quality standards, including the Federal Water Pollution Control Act, as amended (30 U.S.C. 1151 et seq.).

(c) Solid Wastes. All operators shall comply with applicable Federal and State standards for the disposal and treatment of solid wastes, including regulations issued pursuant to the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.). All garbage, refuse or waste shall either be removed from the affected lands or disposal of or treated to minimize, so far as is practicable, its impact on the lands.

(d) Fisheries, Wildlife and Plant Habitat. The operator shall take such action as may be needed to prevent adverse impacts to threatened or endangered species, and their habitat which may be affected by operations.

(e) Cultural and Paleontological Resourcess.

(1) Operators shall not knowingly disturb, alter, injure, or destroy any scientifically important paleontological remains or any historical or archaeological site, structure, building or object on Federal lands.

(2) Operators shall immediately bring to the attention of the authorized officer any cultural and/or paleontological resources that might be altered or destroyed on federal lands by his/her operations, and shall leave such discovery intact until told to proceed by the authorized officer. The authorized officer shall evaluate the discoveries brought to his/her attention, take action to protect or remove the resource, and allow operations to proceed within 10 working days, after notification to the authorized officer of such discovery.

(3) The Federal Government shall have the responsibility and bear the cost of investigations and salvage of cultural and paleontology values discovered after a plan of operations has been approved, or where a plan is not involved.

(f) Protection of survey monuments. To the extent practicable, all operators shall protect all survey monuments, witness corners, reference monuments, bearing trees and line trees against unnecessary or undue destruction, obliteration or damage. If, in the course of operations, any monuments, corners, or accessories are destroyed, obliterated or damaged by such operations, the operator shall immediately report the matter to the authorized officer. The authorized officer shall prescribe, in writing the requirements for the restoration or reestablishment of monuments, corners, bearing and line trees.

§ 3809.3 General provisions

§ 3809.3-1 Applicability of State law.

(a) Nothing in this subpart shall be construed to effect a preemption of State laws and regulations relating to the conduct of operations or reclamation on federal lands under the mining laws.

(b) After the publication date of these regulations the Director, Bureau of Land Managment, shall conduct a review of State laws and regulations in effect or due to come into effect, relating to unnecessary or undue degradation of lands disturbed by exploration for or mining of minerals locatable under the mining laws.

(c) The Director may consult with appropriate representatives of each State to formulate and enter into agreements to provide for a joint Federal State program for administration and enforcement. The purpose of such agreement is to prevent unnecessary or undue degradation of the federal lands from operations which are conducted under the mining laws, to prevent unnecessary administrative delay and to avoid duplication of administration and enforcement of laws. Such agreements may, whenever possible, provide for State administration and enforcement of such programs.

§ 3809.3-2 Noncompliance.

(a) Failure of an operator to file a notice under § 3809.1-3 of this title or a plan of operations under § 3809.1-4 of this title will subject the operator, at the discretion of the authorized officer, to being served a notice of non-compliance or enjoined from the continuation of such operations by a court order until such time as a notice or plan is filed with the authorized officer. The operator shall also be responsible to reclaim operations conducted without an approved plan of operations or prior to the filing of a required notice.

(b) Failure to reclaim areas disturbed by operations under § 3809.1-3 of this title is a violation of these regulations.

(1) Where an operator is conducting operations covered by § 3809.1-3 (notice) of this title and fails to comply with the provisions of that section or properly conduct reclamation according to standards set forth in 3809.1-3(d) of this title, a notice of noncompliance shall be served by delivery in person to the operator or his/her authorized agent, or by certified mail addressed to his/her address of record.

(2) Operators conducting operations under an approved plan of operations who fails to follow the approved plan of operations may be subject to a notice of noncompliance. A notice of noncompliance shall be served in the same manner as described in § 3809.3-2(b)(1) above.

(c) All operators who conduct operations under a notice pursuant to § 3809.1-3 and a plan pursuant to § 3809.1-4 of this title on federal lands without taking the actions specified in a notice of noncompliance within the time specified therein may be enjoined by an appropriate court order from continuing such operations and be liable for damages for such unlawful acts.

(d) A notice of noncompliance shall specify in what respects the operator is failing or has failed to comply with the requirements of applicable regulations, and shall specify the actions which are in violation of the regulations and the actions which shall be taken to correct the noncompliance and the time, not to exceed 30 days within which corrective action shall be started.

(e) Failure of an operator to take necessary actions on a notice of noncompliance, may constitute justification for requiring the submission of a plan of operations under § 3809.1-5 of this title, and mandatory bonding for subsequent operations which would otherwise be conducted pursuant to a notice under § 3809.1-3 of this title.

§ 3809.3-3 Access.

(a) An operator is entitled to access to his operations consistent with provisions of the mining laws.

(b) Where a notice or a plan of operations is required, it shall specify the location of access routes for operations and other conditions necessary to prevent unnecessary or undue degradation. The authorized officer may require the operator to use existing roads to minimize the number of access routes, and, if practicable, to construct access roads within a designated transportation or utility corridor. When commercial hauling is involved and the use of an existing road is required, the authorized officer may require the operator to make appropriate arrangements for use and maintenance.

§ 3809.3-4 Fire prevention and control.

The operator shall comply with all applicable Federal and State fire laws and regulations, and shall take all reasonable measures to prevent and suppress fires in the area of operations.

§ 3809.3-5 Maintenance and public safety.

During all operations, the operator shall maintain his structures, equipment and other facilities in a safe and orderly manner. Hazardous sites or conditions resulting from operations shall be marked by signs, fenced, or otherwise identified to alert the public in accordance with applicable Federal and State laws and regulations.

§ 3809.3-6 Inspection.

The authorized officer may periodically inspect operations to determine if the operator is complying with these regulations. The operator shall permit the authorized officer access for this purpose.

§ 3809.3-7 Periods of non-operation.

All operators shall maintain the site, structures and other facilities of the operations in a safe and clean condition during any non-operating periods. All operators may be required, after an extended period of non-operation for other than seasonal operations, to remove all structures, equipment and other facilities and reclaim the site of operations, unless he/she received permission, in writing, from the authorized officer to do otherwise.

§ 3809.4 Appeals

(a) Any operator adversely affected by a decision of the authorized officer made pursuant to the provisions of this subpart shall have a right of appeal to the State Director, and thereafter to the Board of Land Appeals, Office of Hearings and Appeals, pursuant to Part 4 of this title, if the State Director's decision is adverse to the appellant.

(b) No appeal shall be considered unless it is filed, in writing, in the office of the authorized officer who made the decision from which an appeal is being taken, within 30 days after the date of receipt of the decision. A decision of the authorized officer from which an appeal is taken to the State Director shall be effective during the pendency of an appeal. A request for a stay may accompany the appeal.

(c) The appeal to the State Director shall contain:

(1) The name and mailing address of the appellant.

(2) When applicable, the name of the mining claim(s) and serial number(s) assigned to the mining claims recorded pursuant to subpart 3833 of this title which are subject to the appeal.

(3) A statement of the reasons for the appeal and any arguments the appellant wishes to present which would justify reversal or modification of the decision.

(d) The State Director shall promptly render a decision on the appeal. The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the appellant by certified mail, return receipt requested.

(e) The decision of the State Director, when adverse to the appellant, may be appealed to the Board of Land Appeals, Office of Hearings and Appeals, pursuant to Part 4 of this title.

(f) Any party, other than the operator, aggrieved by a decision of the authorized officer shall utilize the appeals procedures in Part 4 of this title. The filing of such an appeal shall not stop the authorized officer's decision from being effective.

(g) Neither the decision of the authorized officer nor the State Director shall be construed as final agency action for the purpose of judicial review of that decision.

§ 3809.5 Public availability of information.

(a) Information and data submitted and specifically identified by the operator as containing trade secrets or confidential or privileged commercial or financial information shall not be available for public examination. Other information and data submitted by the operator shall be available for examination by the public at the office of the authorized officer in accordance with the provisions of the Freedom of Information Act.

(b) The determination concerning specific information which may be withheld from public examination shall be made in accordance with the rules in 43 CFR Part 2.

§ 3809.6 Special provisions relating to mining claims patented within the boundaries of the California Desert Conservation Area.

In accordance with section 601(f) of the Federal Land Policy and Management Act of October 21, 1976, all patents issued on mining claims located within the boundaries of the California Desert Conservation Area after the enactment of the Federal Land Policy and Management Act shall be subject to the regulations in this subpart, including the continuation of a plan of operations and of bonding with respect to the land covered by the patent.

Garrey E. Carruthers,
Assistant Secretary of the Interior.
February 10, 1983.

Effective April 1, 1983.

APPENDIX B

EXCERPT FROM PLAN OF OPERATIONS, PROPOSED GUADALUPE MOUNTAIN TAILINGS DISPOSAL SITE

Environmental Analysis of Guadalupe Site

Protection of Endangered Species

The Guadalupe Mountain area is dominated by the pinyon-juniper vegetative type, with juniper occupying the rougher and rockier sites, and pinyon occupying the more gentle portions. Understory species are big sagebrush, bitter brush, snakeweed, prickly pear, and cliff rose. Forage grasses include blue grama, western wheatgrass, galleta, Indian rice grass, and blue-bunch wheatgrass. Herbage production is from 200 to 400 pounds per acre. Forage production is from 75 to 150 pounds per acre.

At the higher ends of the Guadalupe Saddle a ponderosa pine community is evident with an understory of mountain muhly and pine drop seed. Productivity of this area is also very low as is the P-J type, which is responsible for the low grazing capacity.

The major wildlife influents of the Guadalupe Mountain area are the mule deer and coyote. The less important influents include the jackrabbit, cottontail, chipmunk and rock squirrel. The most abundant resident birds in a P-J ecosystem of this type are the rock wren, pinyon jay, western lark, sparrow, western mourning dove, and the Rocky Mountain nuthatch. Among the reptiles are the horned lizard, sagebrush swift, collared lizard, and rattlesnakes.

From the initial wildlife survey in the area, it appears that there is no likely habitat for endangered species known to occur in this area. If, after a study undertaken to determine compliance with Section 7 of the Endangered Species Act, an endangered species is likely to be jeopardized by the project, a wildlife management plan will be developed by Molycorp in cooperation with the BLM.

Protection of Cultural and Paleontological Resources

Previous clearance surveys* for projects in the vicinity undertaken by various archaeologists have indicated very little potential for archaelogical sites in this area. The Red River valley is thought to be the northern limit of pueblo settlement; the only potential sites in the Questa/Red River area are seasonal hunting camps. The Guadalupe Saddle is a remnant volcanic cone and is therefore not a likely location for paleontological artifacts.

If a survey reveals archaelogical and paleontological resources at the site, recordation and recovery of the artifacts would be undertaken in cooperation with the BLM.

Air Quality

There are no state or federal air quality regulations applicable to this project at the present time, however Molycorp has undertaken a voluntary program to control fugitive dust emissions. During the operations of the tailings impoundment, the surface area behind the dams area will contain ponded water, wet tailings and dry tailings. Dry tailings can become a source of fugitive dust emissions.

To control fugitive dust emissions from the tailings impoundment, a modified agricultural sprayer is used to apply a chemical stabilizer onto the dried tailings to form a crust, inhibiting wind erosion. The crust is inert and nontoxic so does not create other environmental problems. All information collected to date indicates that there is no potential for health problems associated with the tailings dust. Fugitive emissions from a tailings impoundment are a nuisance, and tailings dust control is therefore a routine operating procedure.

Two meterological stations have been installed in and near the proposed tailings disposal area to monitor weather conditions. Of interest are wind velocities and patterns to identify possible directions of fugitive dust emissions. Temperature and precipitation information will be monitored and input into the reclamation program. Fugitive dust emissions will not be a problem for Questa or for the campgrounds west of the proposed impoundment; prevailing winds are to the south east; under normal wind conditions, particulates carried by the wind should settle out before reaching any residential areas.

Water Quality

Molycorp is currently discharging collected seepage and surface decant from the existing tailings disposal area into the Red River under a permit from the Environmental Protection Agency (EPA). Under the NPDES permit, Molycorp is required to meet certain water quality limits for various parameters before allowing water to discharge into the Red River. Table I shows typical water quality of the discharge and current permit limits.

To meet molybdenum limits, an ion-exchange water treatment plant is currently under construction to remove residual molybdenum from the water. Seepage and decant water from the Guadalupe disposal area will be collected and treated by the water treatment plant before discharging into the Red River. The EPA will be notified of the Guadalupe project at appropriate time.

The quality of water percolating from the tailings ponds is essentially the same as that of the surface return flows. As the water flows thru the formations, many of the chemical constituents are reduced by filtration and absorption so that the water reaching the stream system by groundwater flow is even better in quality than the surface return flows. Chemical analysis of recaptured seepage flows from the existing ponds indicate quality which in all regards is in compliance with requirements of Molycorp's NPDES Surface Water Discharge Permit (Table I). Appendix IV of the engineering report contains further discussion of groundwater. All applicable state and federal requirements will be met for this project.

Solid Waste

The Federal Resource Conservation and Recovery Act (RCRA) generally regulates mineral process tailings as a solid waste. However, at present there are no standards adopted under RCRA for the regulation of mine tailings and mine tailings are, under Section 3001 of RCRA, currently exempt from regulation as a hazardous waste. It is expected that regulations pertaining to tailings as a solid waste will generally require the control measures and monitoring already described above to ensure air quality and the protection of surface and groundwater. Molycorp's tailings do not exhibit the "hazardous" characteristics specified in EPA's hazardous waste regulations. Thus, even without the exemption from regulation as a hazardous waste, it is doubtful if Molycorp's tailings would be classified as a hazardous waste under the EPA regulations.

Fire Prevention/Control

Any property developed as part of a mine operation is governed by safety regulations administered by the Mine Safety and Health Administration (MSHA). These regulations, which will be applicable to the Guadalupe tailings disposal area, require safety equipment, special and general safety practices as well as fire prevention and control.

During construction of the tailings impoundments, clearcutting of the construction area is required, and often the slash is burned under permit from the New Mexico Environmental Division. Equipment is immediately available for fire control when this burning is done.

The only other potential for fire in the Guadalupe tailings disposal site is from the equipment. Each vehicle operated by the mine is provided with a fire extinguisher as required by MSHA regulations. MSHA also requires firefighting equipment on the mine property which is "strategically located, readily accessible, plainly marked, properly maintained and inspected periodically".

The vehicle used in the tailings dust control program is equipped with a 2500 gallon tank and a fire nozzle which could serve as a fire fighting unit if required.

RECLAMATION MEASURES

Experience at the existing tailings impoundment indicate no major reclamation problems with the tailings. The tailings are nontoxic; of a slightly basic configuration which makes them acceptable media to reclaim. Studies undertaken on the existing site since 1970 have indicated the best species to be planted on the site for quick vegetative cover as well as shrub and tree species, which can be used in final reclamation.

In 1976, vegetative test plots were set up in dried tailings to determine whether plants would grow and survive if planted directly in tailings. Western wheatgrass, blue grama, Russian wildrye and yellow sweet clover were among the species tested. The study revealed that all species tested would germinate and create a good cover crop if planted in direct tailings, however the plants required more intensive maintenance than if planted in soil containing more organic matter.

Further research, including some conducted with the U.S. Department of Agriculture, Soil Conservation Service (SCS) indicates much better success in reclamation if the tailings material is covered (capped) with soil material before planting. A heartier ground cover is experienced in all species if planted in capped tailings.

Reclaimed areas at the existing tailings impoundment were capped and planted with barley, yellow sweet clover, Russian wildrye, crested wheatgrass and pubescent wheatgrass.

Good growth has been experienced for all areas reclaimed to date. Volunteer shrub species such as big sagebrush, rubber rabbitbrush and snakeweed have been found on several acres of reclaimed tailings, showing that the tailings can be returned to a natural state.

Final reclamation of the tailings impoundment will not be completed until final closure of the area. Interim reclamation measures which will be taken in the area will be for erosion prevention of areas disturbed during engineering studies of the site and preliminary construction. Top soil stripped from the area during construction will be stockpiled for use in reclamation.

Drilling and materials testing programs in the immediate area of the dam structure will cause minor amounts of disturbances in the Guadalupe area. An area of 40' x 60' is generally required for a drill pad; test pits require slightly more area. The number of areas to be tested is yet undetermined however each disturbed area will be recontoured and seeded with native grasses. Roads to the test sites will be left open; any road cuts with erosion potential will be reseeded to prevent erosion.

As previously noted in this report, the outside faces of the dams will be revegetated as quickly as possible to mitigate visual impacts of the dams and to prevent erosion. The seed mix identified above will be used unless the research continuing with the SCS identifies a preferred mix. Final closure of the impoundment will involve capping the tailings and seeding with the same seed mixture. Several years after seeding with the grass mixture, planting of tree and shrub species will be undertaken. Immediate planting of these species is not viable because the trees and shrubs cannot adequately compete with the rapid growing grass species.

At this time it appears that the recommended reclamation method is to cap the tailings with soil and seed with grass species. Seedlings can be planted in the area several years after the grasses are established. A summary of the SCS research to date is included in Appendix III.

Molycorp has demonstrated good success with a well developed, voluntary reclamation program for the existing tailings impoundment. Currently Molycorp is considering early reclamation of some portion of the existing site to mitigate impacts from tailings dust. In view of the past record for tailings reclamation, a reclamation bond for the Guadalupe site should not be required. Union Oil Company, as Molycorp's parent company assumes the financial responsibility for the reclamation of Guadalupe Tailings Disposal Area.

Reclamation of all areas disturbed by the construction and operation of this impoundment will be completed to the standard described in 43CFR 3809.1-3(d). Reasonable measures will be taken to prevent unnecessary and undue degradation of the federal lands during operation. Reclamation will be undertaken during extended periods of nonoperation to avoid erosion and other adverse impacts. The entire area will—be maintained and operated in a safe and clean manner at all times.

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* Schaafsma, C., Archaeological Clearance Survey Near Questa, New Mexico (Prepared for the Kit Carson Electric Coop.) May 5, 1977.

Snow, D.H., An Archaeological Clearance Survey of the Molybdenum Corporation, Inc. U.S.A. Pipeline Right of Way, Taos County, New Mexico, August 1975

And Others

Questa Division
P. O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212

UNION 76
MOLYCORP

July 7, 1982

Mr. Richard C. Niemeyer
Taos Resource
Area Manager
U.S. Department of the Interior
Bureau of Land Management
P.O. Box 1045
Taos, New Mexico 87571

Re: PLAN OF OPERATIONS FOR THE GUADALUPE MOUNTAIN TAILINGS DISPOSAL AREA

Dear Mr. Niemeyer:

In response to your letter of June 10, 1982, requesting further information about the Plan of Operations for the Guadalupe Mountain Tailings Disposal area, we submit the following information:

1. Protection of survey monuments

It is Molycorp's intention, to the extent practicable, to protect all survey monuments against unnecessary or undue destruction. It should be recognized, however, that disposal of tailings at the Guadalupe site will necessarily cause the destruction of any section corner markers within the impoundment area. In such case, as required by 43 CFR §3809.2-2(f), Molycorp will immediately report the destruction of any corner marker to your office. Section corner markers will be witnessed by a certified surveyor or professional engineer and registered at the County Courthouse. The witness corners will be located outside the perimeter of the impoundment and permanently marked.

2. Noise Levels

We know of no State or Federal statutes or regulations which prescribe minimal general ambient noise levels. There are, however, regulations concerning noise exposure to employees which are enforced by the New Mexico State Inspector of Mines and the Federal Mine Safety and Health Administration.

Under Federal and State law, the maximum 8 hour exposure level for an employee is 90 dBA. Exposure levels may be controlled by administrative or engineering methods or by personal protection equipment. To comply with employee noise exposure limits, Molycorp uses all feasible methods to reduce noise of equipment and to protect employees working with the equipment.

Noise surveys are periodically performed throughout the mine, including the existing tailings disposal area, by State and Federal inspectors. Molycorp has, on every occasion, been found by these inspectors to comply with both State and Federal noise standards.

It has been our experience at the existing tailings disposal site that noise from construction dissipates quickly and rarely disturbs Questa residents living as close as 500 yards from the construction activity. The engineering controls used on construction equipment to comply with safety regulations provide the maximum available control for noise. In the case of the Guadalupe saddle, much of the construction activity will be within the saddle from which most of the construction material will be taken. Thus, much of the noise will be naturally absorbed before it leaves the boundaries of the property. Also, the west dam of the impoundment will absorb a great deal of the noise from construction and operation as it is raised. It is expected that very little noise disturbance will be experienced at the Rio Grande Recreation Area.

3. Reclamation measures

As indicated in the description of the Guadalupe Mountain alternative in Section V of the Plan of Operations, the outside faces of the dam could be seeded after completion of construction of each major lift. It should be recognized that construction at the site may extend over several years before a particular phase is completed. Since it usually takes a significant length of time for grasses to become noticeably established on a dam face, seeding of disturbed areas will be done as soon as possible after completion of a construction phase. Special immediate attention will be given to highly visible areas such as the dam faces.

4. Fencing

Sound operating principles dictate that the area be fenced. It is anticipated that the entire area will be fenced within the first year of operation at the site.

Your letter of June 10, 1982 indicates that with the addition of the foregoing information, you would judge the Plan of Operations to be complete and can begin your assessment of environmental impact. If this is not the case, please let us know immediately so we can supply the desired information. Otherwise, we look forward to meeting with you and your staff at the earliest possible date so that we can discuss the Plan.

Sincerely,

C. R. Sacrison
General Manager

fa

cc: Paul Applegate, Dist Mgr. BLM

APPENDIX C

VEGETATION SPECIES FOUND ON THE GUADALUPE MOUNTAIN SITE

Type and Common Name	Scientific Name
Grassland	
Blue grama	*Bouteloua gracilis*
Western wheatgrass	*Agropyron smithii*
Needle-and-threadgrass	*Stipa comata*
Indian ricegrass	*Oryzopsis hymenoides*
Shrubland	
Big sagebrush	*Artemisia tridentata*
Rabbitbrush	*Chrysothamnus nauseosus*
Broom snakeweed	*Xanthocephalum sarothrae*
Pinque	*Hymenoxys orderata*
Pinyon-Juniper	
Pinyon	*Pinus edulis*
Juniper	*Juniperus spp.*
Mountain mahogany	*Cercocarpus ledifolus*
Skunkbrush	*Rhus trilobata*
Currant	*Ribes aureum*
Oakbrush	*Quercus gambelii*
Ponderosa Pine	
Ponderosa pine	*Pinus ponderosa*
Douglas fir	*Pseudotsuga menziesii*

APPENDIX D

WILDLIFE SPECIES CATEGORIES

Significant Species (refer to the Glossary for definitions).

Recovery Species

1. Federal endangered or threatened species.
2. State endangered or rare/threatened species.
3. BLM sensitive species.

Harvest Species

4. Designated priority management species, game species.
5. Quadrupeds harvested by hunting or trapping.
6. Commercially valuable species, eg. sold legally or illegally for pets.
7. Ungulates on crucial or important seasonal ranges.

Special Interest Species

8. Designated priority management species, protected nonharvest/nongame species.
9. Species limited in number because of restricted habitat.
10. Species limited in number because of position in the food chain.
11. Animals of special interest for scientific study.
12. Animals having a high viewing potential such as pronghorn antelope or bison.

Ecosystem Maintenance Species - all wildlife species not meeting the above criteria.

APPENDIX D (Continued)

WILDLIFE IN THE GUADALUPE MOUNTAIN AREA

AMPHIBIANS AND REPTILES, POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

AMPHIBIANS

AMBYSTOMIDAE - MOLE SALAMANDERS AND RELATIVES

Ambystoma Tigrinum nebulosum - Arizona tiger salamander

PELOBATIDAE - SPADEFOOT TOADS

Scaphiopus bombifrons - plains spadefoot
Scaphiopus hammondi - western spadefoot toad

BUFONIDAE - TRUE TOADS

Bufo woodhousei woodhousei - Rocky Mountain toad
Hylidae Pseudacris triseriata - Chorus frog

RANIDAE - TRUE FROGS

Rana pipiens - leopard frog -

REPTILES

IGUANIDAE - Iguanids

Cortaphytus collaris - Collard lizard
Sceloporus magister - desert spiny lizard
Sceloporus undulatus tristichus - southern plateau lizard
Sceloporus graciosus - northern sagebrush lizard
Phrynosoma douglassi ornatissimum - desert short-horned lizard
Urosaurus ornatus - tree lizard

SCINCIDAE - SKINKS

Eumeces multivirgatus epipleurotus - southern many-lined skink
Eumeces obsoletus - great plains skink

TEIIDAE - WHIPTAILS AND ALLIES

Cnemidophorus velox - plateau whiptail

COLUBRIDAE - COLUBRIDS

Pituophis melanoleucus affinis - Sonora gopher snake
Lampropeltis triangulum celaenops - New Mexico milk snake
Thamnophis sirtalis ornata - New Mexico garter snake
Thamnophis elegans - western garter snake
Thamnophis cyrtopsis - black-necked garter snake

WILDLIFE IN THE GUADALUPE MOUNTAIN AREA

AMPHIBIANS AND REPTILES, POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

REPTILES

VIPERIDAE - VIPERS

Crotalus molossus - Black-tailed rattlesnake
Crotalus viridis viridis - prairie rattlesnake

FAMILY COLUBRIDAE

Coluber constrictor - Racer snake
Opheodrys vernalis - Smooth green snake
Pituophis melanoleucus sayi - Bull snake
Thamnophis cyrtopsis - Black-necked garter snake
Thamnoonis elegans - Western garter snake
Thamnoonis sirtalis - Common garter snake

APPENDIX D (Continued)

MAMMALS POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

SORICIDAE - SHREWS

Sorex cinereus - masked shrew
Sorex nanus - dwarf shrew
Sorex palustris - water shrew
Sorex ragraus - vagrant shrew

VESPERTILIONIDAE - PALINNOSE BATS

Eptesicus fuscus - Big brown bat
Lasionycteris noctivagans - Silver-haired bat
Lasiurus cinereus - Hoary bat
Myotis evotis - Long-earred myotis
Myotis leibii - small-footed myotis
Myotis lucifugus - Little brown myotis
Myotis thysanodes - Fringed myotis
Myotis volans - Long-legged myotis
Myotis yumanensis - Yuma myotis
Plecotus townsendii - Townsend's big-earred bat

LEPORIDAE - HARES AND RABBITS

Sylvilagus nuttalli - Nuttall's cottontail
Sylvilagus auduboni - desert cottontail
Lepus townsendii - white-tailed jackrabbit
Lepus californicus - blacktail jackrabbit

SCIURIDAE - SQUIRRELS

Cynomys gunnisoni - Gunnison's prairie dog
Eutamias minimus - least chipmunk
Eutamias dorsailis - cliff chipmunk
Eutamias quadrivittatus - colorado chipmunk
Spermophilus variegatus - rock squirrel
Spermophilus lateralis - golden-mantled ground squirrel
Tamiasciurus hudsonicus - red squirrel

GEOMYIDAE - POCKET GOPHERS

Thomomys bottae - Botta's pocket gopher
Thomomys talpoides - northern pocket gopher

HETERMOYIDAE - POCKET MICE, KANGAROO MICE, AND KANGAROO RATS

Perognathus flavus - silky pocket mouse
Perognathus intermedius - rock pocket mouse
Dipodomys ordii - Ord's kangaroo rat

CRICETIDAE - MICE, RATS, LEMMINGS, AND VOLES

Microtus longicaudus long-tailed vole
Microtus pennsylvanicus - meadowvole

MAMMALS POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

CRICETIDAE - MICE, RATS, LEMMINGS, AND VOLES

Peromyscus maniculatus - deer mouse
Peromysucs truei - pinon mouse
Neotoma albigula - white-throated woodrat
Clethrionomys gapperi - Gapper red-backed vole
Neotoma cinerca - bushy-tailed woodrat
Neotoma mexicana - Mexican woodrat
Ondatra zibethicus - muskrat
Onychomys leucogaster - Northern grasshopper mouse
Peromyscus boylei - Brush mouse
Peromyscus difficilis - rock mouse
Peromyscus maniculatus - deer mouse
Reithrodontomys megalotis - western harvest mouse

ZAPODIDAE

Zapus princeps - western jumping mouse

ERETHIZONTIDAE - PORCUPINE

Erethizon dorsatum - porcupine

CANIDAE - DOGS, WOLVES, AND FOXES

Canis latrans - coyote
Vulpes vulpes - red fox
Urocyon cineroargenteus - gray fox

CASTORIDAE - BEAVER

Castor canadensis - beaver

PROCYONIDAE - RACCOONS AND COATIS

Bassariscus astutus - rintail
Procyon lotor - raccoon

MUSTELIADAE - WEASELS AND SKUNKS

Lontra canadensis -river otter
Mustela frenata - Long-tailed weasel
Taxidea taxus - badger
Mephitis mephitis - striped skunk

FELIDAE - CATS

Felis concolor - mountain lion
Lynx rufus - bobcat

MAMMALS POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

CERVIDAE - DEER

Cervus canadensis - elk
Odocoileus hemionus - mule deer

ANTILOCAPRIDAE - PRONGHORN

Antilocapra americana - pronghorn

APPENDIX D (Continued)

AVIFAUNA POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

PODICIPEDIDAE - GREBES

Aechmophorus occidentails - western grebe
Podilymbus podiceps - pied-billed grebe

ARDEIDAE - HERONS

Ardea herodias - great blue heron
Egretta thula - snowy egret
Nycticorax nycticorax - black-crowned night heron
Botaurus lentiginosus - American bittern

ANATIDAE - WATER FOWL

Branta canadensis - Canada goose
Chen caerulescens - snow goose
Anas platyrhynchos - mallard
Anas strepera - gadwall
Anas acuta - pintail
Anas crecca - green-winged teal
Anas discors - blue-winged teal
Anas cyanoptera - cinnamon teal
Anas americana - American widgeon
Anas clypeata - shoveler
Aytha affinis - lesser scaup
Bucephala albeola - bufflehead
Oxyura jamaicensis - ruddy duck
Mergus merganser - common merganser

CATHARTIDAE - NEW WORLD VULTURES

Cathartes aura - turkey vulture

ACCIPITRIDAE - KITES, HAWKS, AND EAGLES

Accipiter gentilis - goshawk
Accipiter straiatus - sharp-shinned hawk
Accipiter cooperii - Cooper hawk
Buteo jamaicensis - red-tailed hawk
Buteo swainsoni - Swainson hawk
Buteo lagopus - rough-legged hawk
Buteo regalis - ferruginous hawk
Aquila chrysaetos - golden eagle
Haliaeetus leucocephalus - bald eagle
Circus cyaneus - marsh hawk

APPENDIX D (Continued)

AVIFAUNA POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

PANDIONIDAE - OSPREY

Pandion haliaetus - osprey

FALCONIDAE - CARACARA, FALCONS

Falco peregrinus - peregrine falcon
Falco mexicanus - prairie falcon
Falco columbarius - merlin
Falco sparverius - American kestrel

TETRAONIDAE - GROUSE AND PTARMIGANS

Centrocercus urophasianus - sage grouse

PHASIANDIAE - QUAIL AND PHEASANTS

Callipepla squamata - scaled quail

MELEAGRIDIDAE - TURKEYS

Meleagris gallopavo - turkey

GRUIDAE - CRANES

Grus americana - whooping crane
Grus canadensis - sandhill crane

RALLIDAE - RAILS

Fulica americana - American coot

CHARADRIDAE - PLOVERS

Eupoda montana - mountain plover
Charadrius vociferus - killdeer

SCOLOPACIDAE - SANDPIPERS AND ALLIES

Actitis macularia - spotted sandpiper
Capella gallinago - common snipe
Numenius americanus - long-billed curlew
Tringa melanoleuca - greater yellowlegs
Catoptrophorus semipalmatus - willet
Caldris minutilla - least sandpiper
Limnodromus scolopaceus - long-billed dowitcher

LARIDAE - GULLS, TERNS

Larus delawarensis - ring-billed gull

AVIFAUNA POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

COLUMBIDAE - PIDGEONS AND DOVES

Columba fasciata - band-tailed pigeon
Columba livia - rock dove
Zenaida macroura - mourning dove

TYTONIDAE - BARN OWLS

Tyto alba - barn owl

STRIGIDAE - OWLS

Glaucidium gnoma - pygmy owl
Otus asio - screech owl
Bubo virginianus - great horned owl

CAPRIMULGIDAE - NIGHTJARS

Chordeiles minor - common nighthawk

APODIDAE - SWIFTS

Aeronautes saxatalis - white-throated swift

TROCHILIDAE - HUMMINGBIRDS

Selasphorus platycercus - broad-tailed hummingbird
Selasphorus rufus - rufous hummingbird

ALCEDINIDAE - KINGFISHERS

Megaceryle alcyon - belted kingfisher

PICIDAE - WOODPECKERS

Colaptes auratus - common flicker
Melanerpes formicivorus - acorn wookpecker
Sphyrapicus varius - yellow-bellied sapsucker
Sphyrapicus thyroideus - Williamson's sapsucker
Picoides villosus - hairy wookpecker
Picoides scalaris - ladder-backed woodpecker
Picoides tridaceylus - northern three-toed woodpecker

TYRANNIDAE - TYRANT FLYCATCHERS

Tyrannus verticalis - western kingbird
Sayornis saya - Say phoebe
Pyrocephalus rubinus - vermilion flycatcher
Contopus sordidulus - western wood peewee

AVIFAUNA POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

ALAUDIDAE - LARK

Eremophila alpestris - horned lark

HIRUNDINIDAE - SWALLOWS AND MARTIN

Stelgidopteryx ruficollis - rough-winged swallow
Hirundo rustica - barn swallow

CORVIDAE - JAYS AND ALLIES

Cyanocitta stelleri - Steller jay
Aphelocoma coerulescens - scrub jay
Pica pica - black-billed magpie
Corvus corax - common raven
Gymnorthinus cyanocephalus - pinon jay
Nucifraga columbiana - Clark nutcracker

PARIDAE - CHICKADEES AND ALLIES

Parus atricapillus - blacked-capped chickadee
Parus gambelii - mountain chickadee
Parus inornatus - plain titmouse
Psaltriparus minimus - bushtit

CINCLIDAE - DIPPERS

Cinclus mexicanus - dipper

SITTIDAE - NUTHATCHES

Sitta carolinensis - white-breasted nuthatch
Sitta canadensis - red-breasted nuthatch
Sitta pygmaea - pygmy nuthatch

CERTHIDAE - CREEPERS

Certhia familiaris - brown creeper

TROGLODYTIDAE - WRENS

Troglodytes aedon - house wren
Thryomanes bewickii - Bewick wren
Catherpes mexicanus - canyon wren
Salpinctes obsoletus - rock wren

MIMIDAE - THRASHERS AND ALLIES

Mimus polyglottos - Northern mockingbird
Oreoscoptes montanus - sage thrasher

TURDIDAE - THRUSHES AND ALLIES

Turdus migratorius - American robin
Sialia mexicana - Western bluebird
Sialia currucoides - mountain bluebird
Myadestes townsendi - Townsend solitaire

APPENDIX D (Continued)

AVIFAUNA POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

SYLVIDAE - GNATCATCHERS AND KINGLETS

Polioptila caerulea - blue-gray gnatcatcher
Regulus satrapa - golden-crowned kinglet
Regulus calendula - ruby-crowned kinglet

VIREONIDAE

Vireo vicinior - gray vireo

MOTACILLIDAE - PIPITS

Anthus spinoletta - water pipit

BOMBYCILLIDAE - WAXWINGS

Bombycilla cedrorum - cedar waxwing

LANIDAE - SHRIKES

Lanius excubitor - northern shrike
Lanius ludovicianus - loggerhead shrike

STURNIDAE - STARLINGS

Sturnus vulgaris - starling

PARULIDAE - WOOD WARBLERS

Dendroica petechia - yellow warbler
Dendroica coronata - yellow-rumped warbler
Dendroica townsendi - Townsend warbler
Oporornis tolmiei - MacGillivray warbler
Wilsonia pusilla - Wilson warbler
Dendroica nigrescens - black-throated gray warbler
Icteria virens - yellow-brested chat
Vermivora celata - orange-crowned warbler
Vermivora virginiae - Virginia's warbler

PLOCEIDAE - HOUSE SPARROW

Passer domesticus - house sparrow

ICTERIDAE - BLACKBIRDS AND ALLIES

Sturnella neglecta - western meadowlark
Agelaius phoeniceus - red-winged blackbird
Eupnagus cyanocephalus - brewer blackbird
Molothrus ater - brown-headed cowbird

AVIFAUNA POTENTIALLY FOUND IN OR NEAR THE STUDY AREA

THRAUPIDAE - TANAGERS

Piranga ludoviciana - western tanager

FRINGILLIDAE - FINCHES AND ALLIES

Carpodacus mexicanus - house finch
Carduelis pinus - pine siskin
Carduelis psaltria - lesser goldfinch
Pipilo chlorurus - green-tailed townee
Pipilo erythrophthalmus - rufous-sided towhee
Pipilo fuscus - brown towhee
Calamospiza melanocorys - lark bunting
Pooecetes gramineus - vesper sparrow
Amphispiza bellii - sage sparrow
Junco hyemalis - dark-eyed junco
Junco caniceps - gray-headed junco
Spizella pallida - clay-clored sparrow
Spizella breweri - Brewer sparrow
Zonotrichia leucophrys - white-crowned sparrow
Zonotrichia atricapilla - golden-crowned sparrow
Melospiza melodia - song sparrow
Spizella passerina - chipping sparrow

APPENDIX D (Continued)

FISH SPECIES FOUND IN THE RIO GRANDE AND RED RIVER NEAR GUADLUPE MOUNTAIN

SALMONIDAE - TROUT

Salmo gairdneri - Rainbow trout
Salmo turtta - Brown trout

CATOSTOMIDAE - SUCKERS

Catostomus commersoni - whitesucker
Pantosiosteus plebius - Rio Grande sucker
Carpiodes carpio - river carpsucker

CYPRINIDAE - MINNOWS

Cyprinus carpio Linnaeus - carp
Rhinichthys cataractae - longnose dace
Hybopsis gracilis - flathead chub
Pimephales promelas - fathead minnow
Gila vigrescens - Rio Grande chub
Hybopsis acstivalis - speckled dace

CENTRARCHIDAE - SUNFISH

Micropterus dolomieui - small mouth bass
Lepomis cyanellus - green sunfish

ESOCIDAE

Exox lucius - northern pike

ICTALURIDAE - CATFISH

Ictalurus punctatus - channel catfish

APPENDIX E

ATTENDEES AT BLM OPEN HOUSES
MOLYCORP EA

Taos Resource Area Office - August 10, 1982

Manuel Ortega	Questa	Concerned Citizens Committee(CCC)
Robert Vigil	Questa	CCC
Joe N. Cisneros	Questa	CCC
Ray Laufer	Questa	----
Susan Goldberg	Questa	----
Alyce Frank	Arroyo Hondo	----
Creighton W. Smith	Santa Fe	Environmental Improvement Division
Fred Hopman	Arroyo Seco	----
Steve Winston	Taos	Taos News
Robin McKinney	Taos	Taos News
Rich Klein	San Cristobal	----
Gary Schrodt	Taos	Taos Environmental Association

St. Anthony Parish Hall, Questa - August 10, 1982

Grove Burnett	Vallecitos	Sierra Club and NM Citizens for Clean Air and Water (NMCCAW)
Tom Sharpe	Espanola	The New Mexican
John Gaillor Jr.	Questa	Village of Questa
J.B. Rael	Questa	Self
Joe N. Cisneros	Questa	CCC
Manuel R. Ortega	Questa	CCC
Moises Rael	Questa	Self
Leah Leach	Taos	Albuquerque Journal
Bernadine Trujillo	Questa	Student
Berlinda Trujillo	Questa	CCC
Robert Vigil	Questa	CCC
Peter Adams	Questa	Self
Edward Adams	Questa	----
Michael Gleeson	Questa	Resident
Michele Sott	----	Self
A.J. Trujillo	Questa	Self
Marcus Rael	Questa	Village
Felipe S. Ortega	Questa	----
Elvira Ortega	Questa	----
Teddi M. Ortega	Questa	----
Max Ortega	Questa	----
Jose A. Gallegos	Questa	----
Carlos R. Cisneros	Questa	O.C.A.W.
Bernadette Gonzales	Questa	Citizen

Concerns

Attendees at the open houses identified the following concerns regarding the effects of the proposed molybdenum tailings site on the human and natural environment.

- Air quality - blowing dust;
- Livestock grazing on Guadalupe Mountain and adjacent areas;
- Potential for depreciation of property values in the Questa area;
- What is going to happen to the timber and firewood?;
- Effects of blowing tailings pond dust on the health of Questa High School students and area residents;
- Wildlife on and adjacent to Guadalupe Mountain;
- The importance of molybdenum;
- Further contamination to the Red River due to tailings pipeline breaks and subsequent spills;
- Effects on endangered species;
- Impacts to the Wild and Scenic River;
- Reclamation;
- Disposition of the land after abandonment;
- Obsolescence of the 1872 Mining Act;
- Desire for an Environmental Impact Statement;
- Desire for additional analysis of wind-blown particles;
- Desire for additional analysis of need for the project; and
- Desire for monitoring of the project.

APPENDIX F

HEALTH ENVIRONMENT department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87503
(505) 984-0020
Russell F. Rhoades, M.P.H., Director

TONEY ANAYA
GOVERNOR

ROBERT P. MCNEILL
SECRETARY

ROBERT L. LOVATO
DEPUTY SECRETARY

TAOS RESOURCE AREA
MGR
ACTG
RS
FILE

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 31, 1983

Mr. C. R. Sacrison
General Manager
Molycorp Inc.
P.O. Box 469
Questa, NM 87556

RE: Molycorp tailings disposal at Guadalupe Mountain

Dear Mr. Sacrison:

Pursuant to New Mexico Water Quality Control Commission Regulations, enclosed, you are hereby notified that a discharge plan as defined in Section 1-101.P. is required for your proposed new tailings disposal project to be located in T29N, R12E, Sections 22, 23, 26 and 27 in Taos County, New Mexico.

This notification of discharge plan requirement is pursuant to Sections 3-104 and 3-106.B. of the regulations.

In particular, you should be aware of Water Quality Control Commission (WQCC) Regulation 3-109.G.2. which states that the Director shall not approve a discharge plan for any discharge that will cause any stream standard to be violated. The stream standards are described in WQCC 81-1, a copy of which is enclosed. Note especially 2-120 which applies to all perennial reaches of tributaries to the Rio Grande in Taos and Rio Arriba Counties (except a portion of the Red River). The channels of natural springs located along the Red River and the Rio Grande are perennial tributaries of the Rio Grande. Also note the antidegradation policy expressed in 1-101. and the general standards for hazardous substances given in 1-102.F.

If you have any questions, please contact Karl Souder or Maxine Goad of the EID staff at the above address and telephone number.

Sincerely,

Julia L. Clayton
for RUSSELL F. RHOADES
Director

RFR:KS:egr

Enclosure

cc: Neil Weber, EID District II, Manager
Richard Neimeyer, Area Manager, BLM
Taos Resource Area Office
EID Surface Water Section

Bureau of Land Management
Taos Resource Area

FEB 02 1983

HEALTH
ENVIRONMENT
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JOSEPH F. JOHNSON
DEPUTY SECRETARY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 17, 1983

C.R. Sacrison, General Manager
Molycorp, Inc. Questa Division
P.O. Box 469
Questa, NM 87556

Dear Mr. Sacrison:

The Environmental Improvement Division (EID) has received the reports and other materials submitted at the May 17, 1983, meeting and with your May 20, 1983 letter. We appreciate your efforts to begin providing information at an early date. As was discussed at the meeting, the preparation of a discharge plan for a large project such as the Molycorp mill tailings disposal plan generally takes a considerable length of time. Similar scale mill tailings discharge plans have taken as long as one or two years to prepare. In view of the time-consuming nature of the tests and analyses necessary to prepare such a plan and the time required for EID to evaluate it, we feel it is beneficial to give Molycorp an early indication (well before discharge plan submission) of the types of information that will be necessary.

For a mill tailings discharge plan to be approvable it will be necessary to demonstrate prior to tailings disposal that ground water at any place of withdrawal for present or future use will not be caused to exceed the standards of the New Mexico Water Quality Control Commission (NMWQCC) Regulations 3-103, and that the NMWQCC Stream Standards will not be violated at any point of seepage discharge (Section 3-109.G.2 of the ground water regulations) such as the Big Arsenic Springs. The Stream Standards most likely to be violated in this case are those of Section 1-102.F. which limits metal concentrations to 5% of the amount necessary to cause death in 50% of the organisms in a given test (LC_{50}) and that of Section 2-120, the designated uses and numeric standards for tributaries to the Rio Grande in Taos County. Such a demonstration will require the use of hydrogeological techniques meeting the standards of the profession. It is the opinion of the technical staff that such a determination will require that the following types of information be collected:

1. Aquifer tests and/or tracer experiments (if practicable) to determine aquifer characteristics (transmissivity, storativity, and flow velocity), ground water discharge locations, and amount of dilution which would occur from the point of seepage to the point of discharge. If flow velocities are sufficiently high to complete a test in a reasonable length of time, a tracer test should provide the most definitive information as to flow velocity and the potential for dilution of tailings pond seepage by ground water underflow.

2. A sufficient number of test wells to define a ground water flow net and determine the hydraulic gradient.

3. Detailed interpetation of the tests in item 1 and 2 by a hydrogeologist or other personnel experienced in conducting and analyzing hydrolgeologic data.

4. Laboratory tests (or literature review if equivalent) on the various forms of aquatic life in any springs which are expected to be impacted to determine (a) the 96-hour lethal concentration of metals (present in the tailings pond seepage) for 50% of the organisms (LC_{50}), and (b) the potential for biological magnification of any metal constituent. These tests are presecribed in Section 1-102.F. of the New Mexico WQCC Stream Standards.

Please note that our initial calculations, based on information submitted by W.K. Summers to Vail and Associates, indicate that ground water underflow in the uppermost saturated basalt interflow zone directly below the Guadalupe Mountain proposed tailings impoundment site is less than 1 cfs compared to an estimated 5 cfs of seepage from the tailings ponds. Even allowing for some dispersion along the flow path and considering that these calculations are only order-of-magnitude estimations, it appears quite likely that Stream Standards will be violated in springs adjacent to the Rio Grande and that the ground water standards for molybdendum and manganese will also be violated.

I call your attention to the criteria of the NMWQCC Stream Standards Section 1-101. This anti-degradation paragraph (Section 1-101) states, in part, that "No degradation shall be allowed in high quality waters of designated national and state parks and wildlife refuges if such degradation would impair any of the qualities which caused designation of the parks and wildlife refuges." This is particularly important since the springs most likely to be impacted are within the Rio Grande Wild and Scenic River and contain a rich and varied biota comprised of both aquatic plants and animals.

page 3
C.R. Sacrison
Molycorp, Inc.
August 17, 1983

I hope this letter will clarify our reasons for becoming interested in this project prior to your submission of a discharge plan. If you have any questions please feel free to contact Karl Souder or Maxine Goad at the telephone number listed above.

My staff and I are willing to meet with you at your convenience about these matters or other concerns you might have.

Sincerely,

THOMAS S. UDALL
Acting Director

TSU:KS:jba

cc: Neil Weber, District II Manager, Santa Fe
EID Surface Water Section, Santa Fe
EID Legal Service Bureau, Santa Fe
EID Field Office, Taos
Herb Garn, Bureau of Land Management, Santa Fe
Dave Tague, Surveillance and Standards Section
Jerry Jacobi, Surveillance and Standards Section

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TAOS RESOURCE AREA
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BL

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

April 10, 1984

C.R. Sacrison, General Manager
Union Molycorp
P.O. Box 469
Questa, NM 87556

Re: Geohydrologic Field Investigations Plan for Guadalupe Mountain and Adjacent Areas

Dear Mr. Sacrison:

We appreciated the participation by Molycorp and their consultants in our March 7, 1984 meeting. Your efforts to provide information concerning the Guadalupe Mountain tailings site prior to the submission of a discharge plan will unable us to evaluate this project more rapidly.

This letter is to respond to the proposed field investigation plan presented by Water Resources Associates at the March 7, 1984, meeting. The purpose of our request that geohydrologic studies be performed is to estimate the potential for tailings seepage impacting ground water at the point where it passes from beneath (1) Molycorp property and (2) where it discharges into springs along the Red River or Rio Grande. This is in accordance with our responsibility to evaluate the potential impacts to water with respect to the New Mexico Water Quality Control Commission Ground Water Regulations (as amended through November 17, 1983) specifically 3-109.C.2. and 3-109.G.2.

The field investigation plan should propose a methodology for estimating the extent to which seepage will be diluted by ground water, and for estimating worst-case concentrations of tailings constituents which might impact spring discharges. Published literature and aerial photography strongly suggest that northwest-southeast trending en echelon fault zones control the points of discharge for springs along the Red River and Rio Grande. An evaluation of the possibility of structural control of spring locations should be incorporated into the proposed field investigations plan. We would suggest that detailed geologic mapping be performed prior to making test-hole location decisions. Testing should attempt to determine the hydrologic role of these fault zones in addition to the transmissivity and storativity of the aquifer.

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To summarize, we would recommend that the field investigation be designed to gather the following information:

(1) Subsurface lithology at the Guadalupe Mountain saddle.
(2) Structural geology of the area from Guadalupe Mountain to the confluence of the Red River and Rio Grande.
(3) Better definition of water-table surface contours for the area.
(4) Predicted points of discharge for seepage from the proposed tailings impoundment.
(5) Transmissivity and storativity of the Servietta Basalt aquifer.
(6) Estimates of the regional (or average) vertical hydraulic conductivity of the basalts and the material in Guadalupe Mountin saddle.
(7) Determination of the hydrologic role of any geologic structures (e.g. faults) in the area.
(8) Worst-case concentrations of tailings seepage constituents predicted to impact springs along the Rio Grande or Red River based on the above information for the seepage.
(9) Estimates of net travel times of seepage to ground water based on the above information. If practical, isotopic or tracer techniques might be used as a check on travel times estimated by the hydrologic information.

If you have any questions about this matter, please contact me. We would be glad to arrange a meeting to discuss the field investigation plan in detail.

Sincerely,

Anthony Drypolcher
Acting Bureau Chief
Ground Water and
Hazardous Waste Bureau

AD:KS:clm

cc: Neil Weber, EID, District II Manager, Santa Fe
Scott Dick Peddie, EID, District II, Taos
Tom Mottl, BLM, Taos Area Office
Herb Garn, BLM, Santa Fe Area Office
R.S. Dewey, Union Molycorp, Los Angeles
Dave Stephenson, Water Resources Associates, Phoenix
Roger Ferland, Esq., Phoenix
Grove Burnett, Citizens for Clean Air & Water, Vallecitos

APPENDIX G

CULTURAL RESOURCES MITIGATION PLAN

The research design presented above identifies a number of specific research problems that should be addressed in the Guadelupe Mountains. The following discussion outlines a general research methodology for addressing these problems. Research designs must be dynamic instruments because research problems change as data are collected, analyzed, and assimilated. Research strategies must, therefore, remain sufficiently flexible to accomodate the evolutionary change of a research design. One means of building flexibility into a research strategy is to conduct research in discrete stages. Preliminary stages of data collection and analysis can then provide information that can be used to adjust or reformulate the research design during subsequent stages of data collection and analysis. This process of continuous feedback between research data and research problems helps to preserve the continuity between theory and method in an ongoing research project. The mitigation plan for the Guadalupe Mountain sites that is proposed here involves two discrete phases of data collection and analysis. The first phase focuses on site delineation, detailed site mapping, and sample subsurface testing. The second phase involves intensive site excavation. Both phases conclude with analyses and reports of findings.

Phase I: Resurvey and Testing

Phase I begins with an intensive resurvey of the Guadelupe Mountains impact area for the purpose of delineating site boundaries and intrasite artifact distributions and cultural features. Artifacts collected during the 1982 survey by the Laboratory of Anthropology will be relocated in order to evaluate their context with respect to redefined activity areas. The resurvey will be conducted by multiple field crews, each crew consisting of three or four crew members under the direction of a crew chief. Crews will conduct an intensive pedestrian survey of the study area, walking abreast in parallel transects to ensure intensive coverage of the entire impact zone. All artifacts and cultural features visible on the ground surface will be marked with wire pin flags in order to facilitate the delineation of site boundaries and artifact concentrations.

Once the resurvey is completed, detailed transit maps of the archaeological sites and associated activity areas will be made. A central datum will be established outside the direct impact zone and subsidiary datums will be establised as necessary within the impact zone for the purpose of constructing detailed basemaps of all sites and artifact concentrations. Each site basemap will record the boundaries of the site and the location of all cultural features and visible artifact concentrations. Isolated diagnostic artifacts will also be mapped in order to facilitate site structural analyses.

Upon completion of mapping operations, a program of sample subsurface testing will be conducted. The primary objectives of the testing program will be to determine the nature and depth of cultural deposits, evaluate the relationships between surface and subsurface cultural remains, and amass a preliminary artifactual and nonartifactual data base for analyses bearing on general research problems outlined above. Accomplishing these objectives during the first phase of field work is essential in order to devise appropriate mitigation strategies for phase two of the Guadelupe Mountains research.

Test excavations will be accomplished with a combination of randomly placed test pits and a series of systematic soil auger excavations. In order to facilitate random test pit placement, a four by four meter grid system will be constructed on each site with the aid of a transit and stadia rod. Working from a centrally-placed site datum, four baselines approximating the cardinal and subcardinal directions will be constructed from the site datum and terminate at the approximate boundaries of the site. These eight terminal points will then be connected by straight lines to form an eight sided polygon, which will define the extent of the grid system for each site. To insure an even distribution of excavation grids across the entire site, each site will be divided into four quadrants using the intersecting north-south and east-west baselines, and excavation grids will be selected at random within each quadrant. Biased grids will also be excavated, at the discretion of the field supervisor, to investigate cultural features and other visible cultural manifestations. Test excavation sample size will be based on estimates of internal site variability and the depth of cultural deposits. A sample fraction of less than five percent of total site area will probably be sufficient for accomplishing the estimation goals of the first field phase. Excavation grids will be one by one meter in area, but will be expanded to delineate any cultural features that might be encountered.

In addition to test pit excavations, soil augers will be used to determine the presence and depth of subsurface cultural deposits in untested areas of sites and in randomly selected areas between sites. Auger holes will be placed at regular intervals along predefined transect lines and their locations recorded on site basemaps with the aid of a transit and stadia rod. Any subsurface cultural features encountered in the auger tests will be excavated, if necessary.

All artifacts collected during test excavations will be assigned field proveniences and removed to the laboratory for cleaning, sorting, analysis, and curation. Nonartifactual samples will also be systematically collected. Macrofloral and faunal samples will be collected, when encountered, and submitted for species identification and functional analysis. Flotation and pollen samples will also be collected and analyzed from all cultural proveniences. Special emphasis will be placed during the testing phase on the collection of charred organic remains for radiocarbon age determination. Archaeomagnetic dating samples will also be sought, as will samples of obsidian for hydration dating.

The results of these analyses will provide preliminary data bearing on the research questions outlined in the preceding section. Preliminary answers to questions regarding site temporal placement and cultural affiliation will be obtained from an expanded artifact inventory and supported by chronometric dates obtained from carbon-14 and archaeomagnetic analysis. Such data will contribute to a substantial refinement of the research design as it relates to fundamental culture historical questions. The chronological ordering of sites and activity areas in the Guadelupe Mountains will also contribute to the refinement of processual problems that will be addressed in detail during the second phasc of the field study; problems relating to culture change and changes in human adaptive strategies in north central New Mexico.

Analyses of macro and micro bontanical and faunal remains from the test excavations should provide preliminary answers to questions relating to prehistoric subsistence strategies and seasonality of site occupation. These data will articulate with data derived from studies of artifact technologies and functions to provide a more detailed characterization of prehistoric adaptations in the study area, and how adaptive strategies changed through time in response to changes in the environment and the availability of critical resources.

Data collected during the preliminary testing phase will be summarized and interpreted in a final technical report that will include a revised research design for the excavation phase of the field project. On the basis of this new research design, a specific mitigation plan will be formulated and proposed for each of the sites destined for impact in the study area.

Phase II: Excavation

Phase two of the Guadalupe Mountains project will involve intensive excavation of archaeological sites in the impact zone in order to mitigate the adverse effects of the proposed mine tailings disposal by Molycorp, Inc. The specific site mitigation plans designed on the basis of the resurvey and test excavation phase of the project will dictate the specific sampling, collection, and excavation strategies implemented on each site. These strategies will generate the data necessary to answer the research problems posed by the revised research design. Although it would be premature to present details of a final mitigation strategy until after the completion of the preliminary testing and analysis phase of the project, certain general guidelines can be formulated at this time.

The Guadalupe Mountains study area appears to have supported sporadic occupation by mobile groups of hunters and gatherers for at least several thousand years. The potential for the accumulation of overlapping activity debris from innumerable short duration occupations will require extremely sophisticated excavation controls in order to differentiate among multiple discrete occupations of sites and activity loci. Carefully controlled excavation strategies designed to preserve the spatial and temporal integrity of artifacts and nonartifactual materials will be particularly important in stratified site deposits where there is a high potential for multiple discrete occupations. Excavation in one meter square grids using fine-grained stratigraphic controls would appear to be the minimal control necessary on such sites. Even more stringent excavation controls, such as the point proveniencing of all artifacts and nonartifactual materials, would probably be warranted in high density activity areas, in areas within and around cultural features, and in areas of compressed or complex cultural stratigraphy.

Site excavations should utilize the control grid systems established during the test excavation phase of the project, and grids to be excavated should be selected in order to enlarge on the excavation sample already obtained during test excavations at each of the sites. Initial grid selection should be randomized, but excavation that encounters cultural features or occupation surfaces should be expanded into adjacent grids to expose the full extent of the cultural remains. On completion of excavation, all excavation exposures should be mapped and photographed.

Specific data collection strategies during the excavation phase will, of course, be controlled by the research design. In general, however, the same kinds of data that were collected during the testing phase one will be collected during intensive phase two excavations. The emphasis will again be on the collection of representative samples of artifacts and nonartifactual materials. Radiocarbon, archaeomagnetic, and dendrochronological samples will be sought in order to further refine the site chronological model. Analysis and interpretation of all recovered materials will be incorporated into a final technical report of the excavations.

GLOSSARY

ACRE-FOOT OF WATER. The volume of water contained in one acre, one foot deep; 43,560 cubic feet.

ALLOTMENT. An area designated and managed for grazing of livestock.

ALLOTTEE. Holder of a license or permit for grazing on an allotment. A permittee.

ALLOTMENT MANAGEMENT PLAN (AMP). A concisely written program of livestock grazing management for a specific grazing allotment.

ALLUVIUM. Unconsolidated rock or soil material such as gravel, sand, silt, or clay deposited by running water.

ANIMAL UNIT (AU). One mature (1,000-pound) cow or the equivalent based upon average daily forage consumption of 26 pounds dry matter.

ANIMAL UNIT MONTH. The amount of forage required by an animal for one month.

AQUIFER. A body of earth material capable of producing ground water at a useful rate from a well.

CALCAREOUS SOILS. Soils sufficiently rich in calcium carbonate to cause effervesence when tested with hydrochloric acid.

CONTRAST. The effect of a striking difference in the form, line, color, or texture of the landscape features within an area being viewed.

DECANT. Surface water that is collected in a tailings disposal facility and transported away from a mine site.

ECOSYSTEM. A community, including all the component organisms, together with the environment, forming an interacting system.

ECOSYSTEM MAINTENANCE SPECIES. A wildlife species society has not singled out by law or administrative decision for high-intensity preservation or for sport and commercial harvest. These species make up the bulk of an ecosystem's fauna. They are important because they define an ecosystem, i.e., they make an ecosystem what it is.

EDGE. The presence of openings or clearings within a vegetative type. Most wildlife species do best near these openings where edge is provided. In these areas animals find food, nesting sites, mating and resting places, and shelter.

ENDANGERED SPECIES. Any species in danger of extinction throughout all or a significant portion of its range(s).

EOLIAN SEDIMENT. Unconsolidated rock or soil material deposited by wind.

GROUND WATER. Water found beneath the surface of the earth within the zone of saturation.

GROUND WATER INFLOW. Accretion of surface flow from the ground.

HABITAT. A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

MICROGRAM. 1x10^{-6} gram or 3.5x10^{-8} ounce.

MICROMHO (umho) = 1x10^{-6} mho. A measure of conductance; the reciprocal of an ohm.

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES). A permitting system authorized by the Environmental Protection Agency under the Federal Water Pollution Control Act. This system regulates the amount of effluents (i.e., pollutants) that can be discharged into any body of live water.

PERMEABILITY. The capacity for transmitting fluids, usually measured in centimeters/second.

RUNOFF. The total amount of water flowing in a stream.

SCENIC QUALITY. The degree of harmony, contrast and variety within a landscape.

SECTION CORNER. In the United States Public Land Surveys, one of the four corners identifying the external boundaries of one of the 36 subdivisions in a township.

SIGNIFICANT SPECIES. Categories of wildlife species society has singled out for special management emphasis. They are usually recognized by name in administrative and management actions.

Recovery Species. Wildlife species placed in first priority by legislative or administrative mandate.

Harvest Species. Wildlife species subject to sport or commercial harvest under regulations of a federal and/or state wildlife management agency.

Special Interest Species. Species of special ecologic, public or scientific interest.

SPECIFIC (ELECTRICAL) CONDUCTANCE. The ability of water to transmit an electrical current. It is related to the concentration and charge of ions present in the water.

SURVEY MONUMENT. A permanent marker identifying a survey point; e.g., a section corner.

TAILINGS. Waste rock produced during the processing of ore.

THREATENED SPECIES. Any species likely to become endangered within the foreseeable future throughout all or a significant portion of its ranges.

TOTAL SUSPENDED PARTICULATES (TSP). All solid or semisolid material found in the atmosphere.

VERTICAL MIXING. Mixing of water in a vertical dimension.

VISUAL RESOURCES. Land, water, vegetation, animal, and other visible features.

VISUAL RESOURCE MANAGEMENT (VRM). The planning, designing, and implementation of management objectives to provide acceptable levels of visual impacts for all BLM resource management activities.

VISUAL RESOURCE MANAGEMENT CLASSES. The degree of acceptable visual change within a characteristic landscape. A class is based upon the physical and sociological characteristics of any given homogeneous area and serves as a management objective.

Class I areas (preservation) provide for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar sites where landscape modification activities should be restricted.

Class II (retention of the landscape character) includes areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.

Class III (partial retention of the landscape character) includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.

Class IV (modification of the landscape character) includes areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

Class V (rehabilitation or enhancement of the landscape character) includes areas where change is needed. This class applies to areas where the landscape character has been so disturbed that rehabilitation is needed. This class would apply to areas where the quality class has been reduced because of unacceptable intrusions. It should be considered an interim short-term classification until one of the other classes can be reached through rehabilitation or enhancement.

WATER-LEVEL CONTOUR (EQUIPOTENTIAL LINE). A line in a two-dimensional ground water flow field such that the total hydraulic head is the same for all points along the line.

WATERTABLE. The upper surface of the zone of saturation.

WITNESS CORNER. A monumental survey point near a corner established as a reference mark where the true corner is inaccessible or cannot be monumented or occupied (Gary 1972).

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tailings
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	UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY.
	REPORT BY WINOGRAD "GROUND-WATER CONDITIONS AND GEOLOGY OF SUNSHINE VALLEY AND WESTERN TAOS COUNTY, NEW MEXICO."

MOLYCORP INC.
QUESTA NEW MEXICO
LONG RANGE TAILINGS DISPOSAL
FEASIBILITY STUDY
GUADALUPE MOUNTAIN AREA
GENERAL SITE PLAN
TOPOGRAPHIC & GROUNDWATER TABLE CONTOURS

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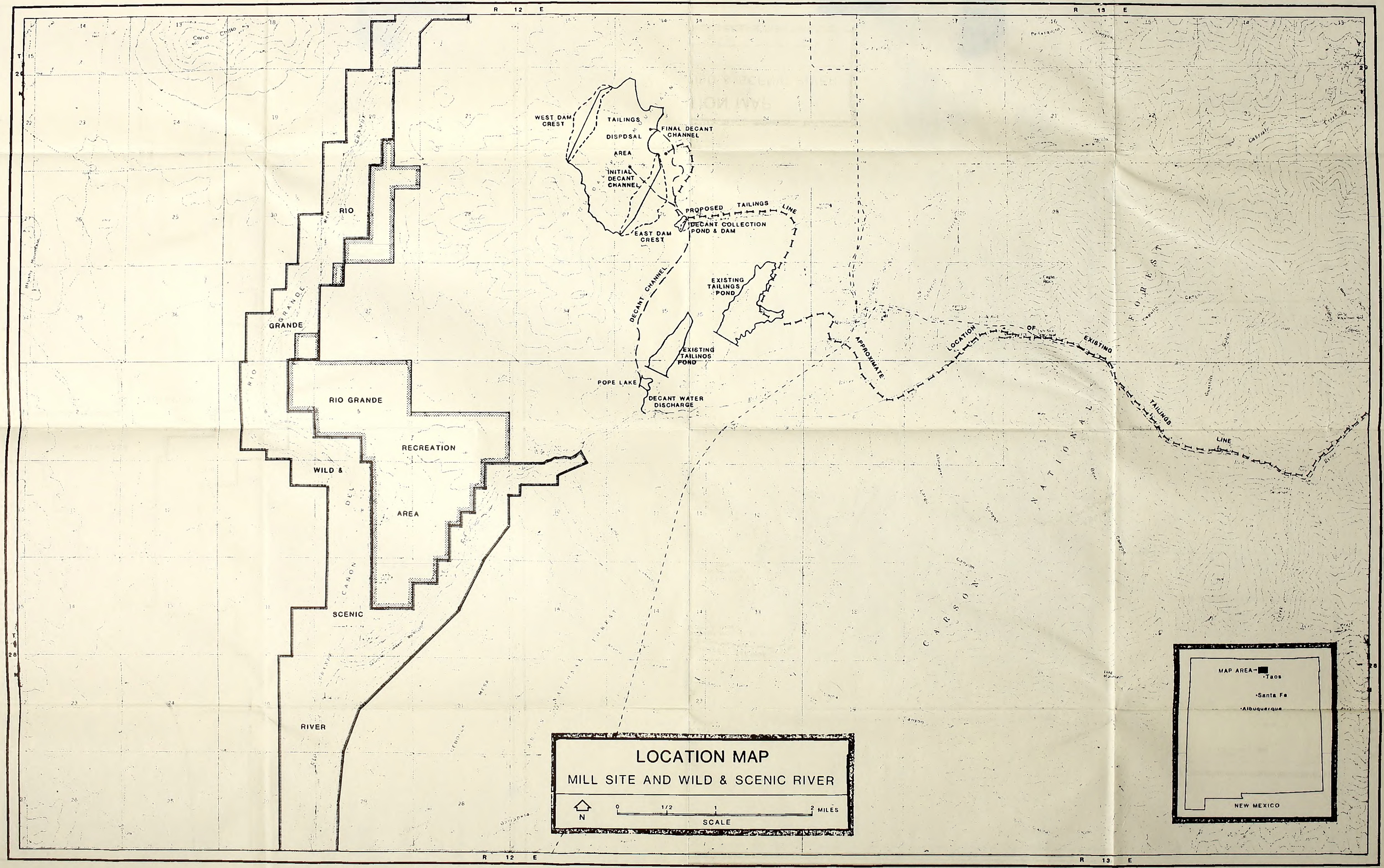

LOCATION MAP

MILL SITE AND WILD & SCENIC RIVER

SECTION AA

ELEVATION - FEET
8400
8200
8000
7800
7600
7400
7200
7000
RIO GRANDE
EXISTING GROUND SURFACE
PROPOSED WEST DAM
MAXIMUM TAILINGS SURFACE EL. 8190±
PROPOSED TAILINGS STORAGE
PROPOSED EAST DAM
EXISTING TAILINGS IN STORAGE, SECTION 36
REGIONAL GROUNDWATER TABLE (SEE NOTE 2)
ELEVATION - FEET

SECTION BB

NOTES:

1. FOR LOCATION OF SECTIONS IN PLAN, SEE DRAWING No. T10537-1.
2. FOR FURTHER BACKGROUND ON THE REGIONAL GROUNDWATER TABLE, SEE REFERENCE REPORT BY WINOGRAD.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT.

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	REPORT BY WINOGRAD "GROUND-WATER CONDITIONS AND GEOLOGY OF SUNSHINE VALLEY AND WESTERN TAOS COUNTY, NEW MEXICO"

MOLYCORP INC.
QUESTA NEW MEXICO
LONG RANGE TAILINGS DISPOSAL
FEASIBILITY STUDY
GUADALUPE MOUNTAIN AREA
SECTIONS
REGIONAL GROUNDWATER TABLE

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DATE APR. 7, 1982 SCALE AS SHOWN

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